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GEOGRAPHICAL READERS

FIRST
GEOGRAPHICAL READER

FOR STANDARD II.

WITH NUMEROUS ILLUSTRATIONS

LONDON
WM. ISBISTER, LIMITED
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1879

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PREFACE.

The Geographical Readers are designed to serve the double purpose of furnishing Reading Lessons sufficiently interesting and attractive to stimulate a taste for reading, and at the same time of conveying in the most interesting and simple form a large amount of useful geographical knowledge.

The First Reader deals with Geographical Terms and Definitions, and is adapted for use in the Second Standard of Public Elementary Schools. The book is in two parts. The First Part is taken up entirely with physical objects and phenomena seen at the sea-side on the occasion of a holiday visit; the Second Part deals with lessons given in the school-room at home.

Many valuable suggestions have been taken from an admirable little work, "First Steps in Geography,"* and, by permission of the author, some extracts have been made, for which the writer desires to express his acknowledgments.

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* "First Steps in Geography, adapted to the requirements of the New Code." Wm. Isbister, Limited.

CONTENTS.

PART I.—AT THE SEA-SIDE.

Lesson. Page

I. First View of Sea.—Extent of Sea.—Sea-gulls.—Waves.—Tides 1

II. Ship.—Smack.—Sea-weed 8

III. Rough Sea.—Bay.—Creek.—Gulf.—How Rocks are worn away, and how Pebbles and Sand are formed 13

IV. Cape.—Head.—Headland.—Harbour.—Haven.—Road.—Roadstead 20

V. The Sea-gull 25

VI. Ness.—Promontory.—Point.—Peninsula . . 27

VII. Island.—Mainland 31

VIII. Base of Peninsula.—Isthmus.—Country.—Continent.—Archipelago 36

IX. Mountains.—Hills.—Range.—Chain.—Group.—Ridge.—Crest.—Base.—Summit.—Spurs.—Mountain Pass 42

X. Volcano.—Crater.—Valleys.—Vales.—Dales. Dells.—Glen.—Plain.—Plateau . . . 50

XI. River.—Mouth.—Delta.—Course.—Tributary.—Current.—Banks.—Bed.—Channel.—River Basin.—Watershed.—Glaciers.—Icebergs 56

Lesson. Page
XII. Story of a Drop of Water 66
XIII. Clouds.—Rain.—God's Waterworks . . . 73
XIV. Storm and its Effects 78
XV. Recapitulation 81
XVI. „ (*continued*) 86
XVII. „ „ 91
XVIII. „ „ 95

PART II.—AT HOME.

XIX. Maps 101
XX. „ (*continued*) 107
XXI. „ „ 112
XXII. Points of the Compass 121
XXIII. A Day on the Home Lake.—A Chart . . . 127
XXIV. Shape of the Earth 136
XXV. Daily Motion of the Earth.—Day and Night 143
XXVI. Axis.—Poles.—Equator.—Zones 148
XXVII. Annual Motion of the Earth.—The Seasons 152
XXVIII. Degrees.—Latitude.—Longitude 161

ILLUSTRATIONS.

Subject. Page
Sunset at Sea 3
Low Tide.—The Shore . 6
Ship in Full Sail . . . 9
Group of Sea-Plants . . 10
Root of Sea-Plant . . . 11
Cliff.—Arching of Lower Part of Rock 16
Harbour 22
Sea-Birds 25
A Ness. 28
An Island. 32
Porpoise 40
Mountain Ranges . . . 44
Group of Hills 46
Mountain Pass 48
A Volcano 51
A Gorge 52
Plain, with Hills in the Distance 57
Waterfall. 61
The Cloud 74
Kennels 102
Plan of Wall 105
Plan of Floor 109

Subject. Page
Plan of Garden 110
Map of Village 115
Map of Staplehurst . . 116
Map of Country . . . 117
Sea.—Lake.—Mountain-chains.—Towns . . . 119
Elementary Compass . . 124
Cape Sleepy 132
Sketching an Island . . 133
George's Chart of Home Lake 134
Globe 136
Line of Sight (Ball) . . 139
Line of Sight (Horizon) . 139
Line of Sight (Plane) . . 140
Globe and Lamp (Day and Night) 144
Globe, with Zones . . . 150
Globe, in Slanting Position 155
Table — showing the Earth's Orbit 156
Seasons — the Earth's Orbit 157

PART I.

AT THE SEA-SIDE.

LESSON I.

First View of Sea.—Extent of Sea.—Sea-Gulls.—Waves.—Tides.

"I WISH to-morrow would come," said little Fred Goodman to his elder brother George. The boys looked forward to having a grand treat, for they were going with their father to the sea-side. They had never seen the sea, of which they had heard and read so much. And now, when school had broken up, the boys were in high glee, for their holiday was to be spent in watching ships, or in groping among the sand to find pretty stones and shells, or in sailing in boats.

The morrow came, and the boys were awake almost as soon as the sun had peeped over the hills. Breakfast was over early, and Mr. Goodman and his two sons started away by train. How glad were the hearts of those two boys! On their journey they could talk of nothing but ships and fish, boats and shells.

When they reached the little town the boys clapped their hands for joy, and could hardly wait while a home was found, so eager were they to look on the broad waters before the sun went down. And their first view filled their hearts with gladness. "What a pretty sight!" said George; and his little brother seemed almost lost in wonder.

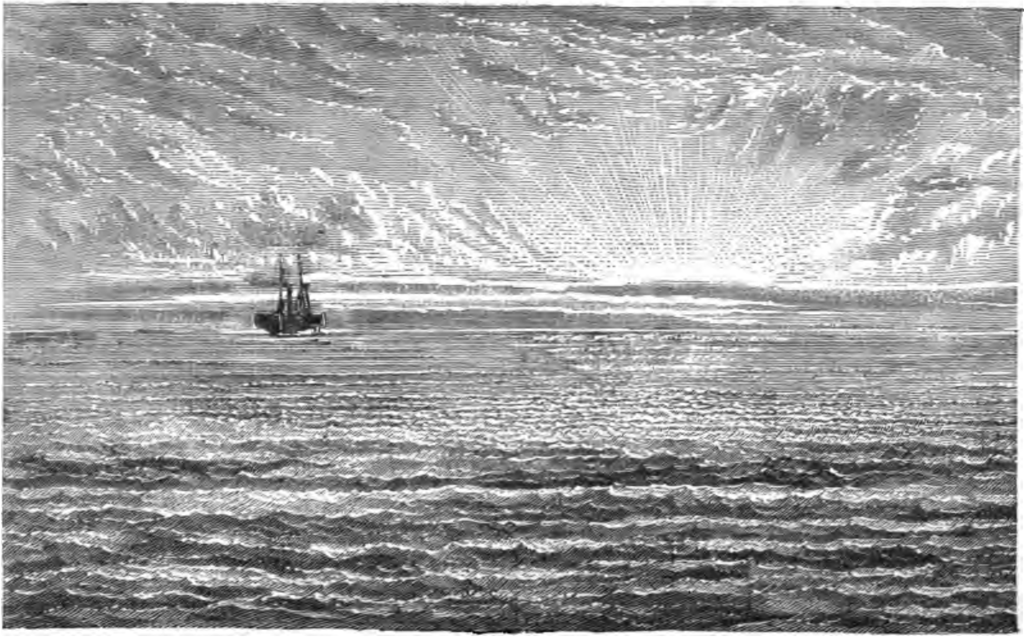
"You have often asked me to bring you to the sea-side," said Mr. Goodman; "now, what do you think of it?"

"Think of it!" cried Fred. "I can't think at all. It is so grand."

Then they watched in silence as the sun went down.

Next morning they were at the water-side early, and took their seats on the sand. "Oh, how wide the sea is, father!" said Fred.

"I cannot see the end of it," added George. Nor was it likely that he should, for it was many hundreds of miles wide, and the sky seemed to dip into the sea far away. George was by no means a dull boy; he saw that the sky and the sea appeared to meet, and he quickly asked what lay beyond.



SUNSET AT SEA.

"More water and more sky," replied the father. "If we could stand where they seem to meet, and were to look beyond, we should see still more water and sky appearing to meet many miles farther off. Perhaps I may explain that some other day."

Little Fred started with surprise, and called out at the top of his voice, "Oh, what are those birds like ducks?" He had seen a flock of white sea-birds fly down to the edge of the water, where they sometimes strutted about in the mud to pick up food, and sometimes dived down into the water, just as ducks do in the ponds and rivers at home.

"Those birds," said Mr. Goodman, "are called gulls; they live for weeks together flying about over the sea, or swimming in the water, and when they come to land they make their home in the rocks and caves and banks near to the sea."

The waters rose high up in the air like little hills, and fell down again, and so they kept tossing about. Those high hills of water, with furrows between the hills, tipped with white spray like wavy snow, are called *waves.* The sea is always rising in waves, which fall again, always on the move; and during a storm they leap and roar, and splash about with great force, tossing, as Mr. Goodman said, "as high as the old barn at home."

"Look!" cried little Fred; "see how they roll on the land, almost to our feet."

"Yes," said the father; "you see that as soon as they touch the land, they *break;* it is then that they are called *breakers.* As they roll up the bank they wash up the pebbles and sand, and then slide back again."

"See!" said George, in an excited tone; "the water is much nearer to us now than it was when we sat down."

"Exactly," replied the father; "and, unless we move higher up the bank, it will wash over us."

The boys asked how far the water would rise, to which Mr. Goodman replied, "We shall see by-and-by. It will go on rising, little by little, for about six hours; and then go lower, little by little, for six hours more; and then rise again, and again fall.

"That motion forward and backward," said the father, "is known as the '*tide.*' When the sea comes a long way up the bank, and makes the water deeper, so that boats can float nearer to the town, it is called *high tide.* The rising of the water is called its *flow.* When the water has gone down to the lowest

LOW TIDE.—THE SHORE.

place, about six hours later, it is called *low tide*. The falling of the water is called its *ebb*."

Far out at sea the waves tossed in the air, and seemed to sport in the bright sunlight as though they were at play. When they rise to a great height they are often called *mountain* waves. A mountain is a very high hill; and the waves sometimes *mount* very high, and hence are called mountain waves.

The party spent several hours in watching the motion of the sea and in walking about the beach, until dinner-time arrived, when they made their way back.

school
watch'-ing
ap-pear'
ris'-ing
ex-plain'
jour'-ney
be-yond'
swim'-ming
break'-fast
break'-ers
moun'-tain
fur'-rows
peb'-bles
hol'-i-day
re'-plied
sev'-e-ral

Grop'-ing,	feeling with the hands, searching.	**Ex-cit'-ed,**	eager, anxious.
Tip'-ped,	covered at the top.	**Ar-riv'-ed,**	reached, come to.
Fur'-rows,	grooves or channels.	**Ea'-ger,**	anxious, desirous.

DICTATION EXERCISE.

That part where the land and water meet is called the beach, or coast, or sea-shore. The waves break as they reach the shore. When the water is at its highest, we say it is "high tide;" and when the water is at its lowest, we say it is "low tide."

LESSON II.

Ship.—Smack.—Sea-weed.

In the afternoon the father and his two sons returned to the water-side. A fine ship in full sail was seen in the distance, riding along over the waves.

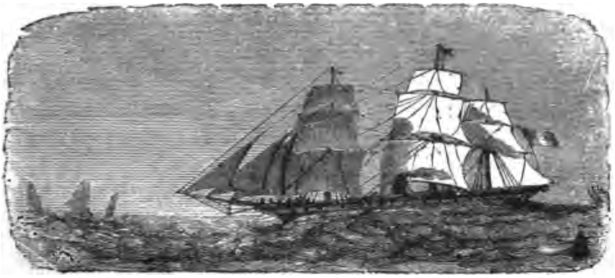
George and Fred almost wished they could go aboard that pretty ship and peep into the hold, or hollow part of the vessel, to see what was packed there. Their father knew a much shorter way of finding out the nature of the cargo.

Do you know what *cargo* means? It is the name for all the goods which the ship carries. Sometimes a vessel brings her hold full of corn or rice; at others, perhaps a dozen kinds of goods. All these are called "cargo;" and Mr. Goodman knew that an old sailor who walked about the sands would be able to tell all about it at once.

"Where do you suppose that ship comes from?" he asked.

The old sailor raised his spy-glass to peep at the vessel, and replied that she was in the China trade; that is, that the ship had come all the way from China. The cargo, he said, was most likely made up of tea, also of silk, and perhaps some rice. When that ship returns, it may take iron, cloth, and many other things of which we have plenty to sell, and which the people of China are very glad to buy.

"But," said little Fred, "there is one ship not much larger than a boat; does that small thing go across the sea?"



SHIP IN FULL SAIL.

"That, my little fellow," replied the sailor, "is not a ship; it is a *smack*, which never ventures very far away from home."

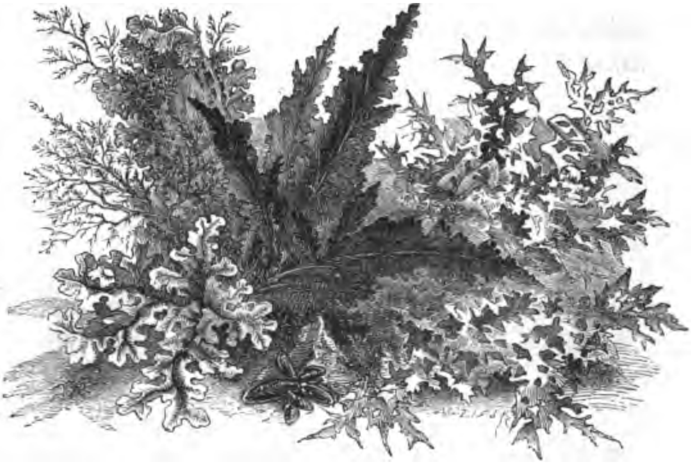
"A smack! what is that?" asked Fred.

"A smack," said the sailor, "is a boat in which men go to catch fish. They throw large nets into the sea to catch cod, mackerel, herrings, soles, and other kinds of fish."

George stooped to pick up something from off the sand, and held it above his head, saying, "Oh, see here! here's a pretty thing! What is it?"

"That," said the sailor, "is a sea-weed."

"But," said Mr. Goodman, "I prefer to call it a sea-plant, and not a weed. Some parts of the sea are as rich in green plants as a field clothed with grass."



GROUP OF SEA-PLANTS.

The old sailor knew this to be true as well as Mr. Goodman did, but the boys had never heard before of such strange things about the sea. Their father told them that just as there were many kinds of plants growing on land—

such as rushes in the wet marshes, and fine grass on the dry hills—so there were some kinds of plants that grew in the deep salt water, and others on the banks or shore of the sea, where they were covered only when the tide rose and flowed over them.

"This one," said George, picking up a rough weed, "looks almost like the root of a tree."

ROOT OF SEA-PLANT.

"Yes," replied his father, "there are many kinds; some with broad leaves like ribbon, and some like lengths of brown cord; others like bunches of hair; and there are plenty with thick stems and strong roots, like the one you have picked up.

"These plants are very useful. One kind

is eaten by cattle, and even by men in some countries; and some kinds are used to cure people who are ill. But the chief use of these plants is to afford shelter and food for fishes and other animals that have their home in the deep sea. I remember the song of the sea-weeds, in which they say—

"The depths of the ocean
  Afford us a home,
We ride on the shore
  On the billow's white foam;
We float on the wave,
  And we dance in the spray;
We come with the tide,
  With its ebb glide away.

"We grow, and we cling
  To the wild lonely rock;
Nor loosen our hold
  For the billow's rude shock.
We flourish most bright
  'Neath the deep rolling wave,
Adorning with beauty
  Each seaman's lone grave."

rough
chief
foam
i'-ron
rib'-bon
sail'-or
peo'-ple
her'-rings
cloth'-ed
aft-er-noon'
count'-ries
mack'-er-el

Marsh'-es, low, wet land.
Af-ford,give.
Bil'-lows, large waves.
Car'-go, load carried by a ship.
Spray, drops of water thrown [into the air.
Glide, to flow or move gently.
A-dorn'-ing, clothing.

LESSON III.

ROUGH SEA.—BAY.—CREEK.—GULF.—HOW ROCKS ARE WORN AWAY, AND HOW PEBBLES AND SAND ARE FORMED.

EARLY the next morning our friends left the town by a winding path, which led them up a steep hill to the top of a rocky cliff, whence they had a wide view of the open sea.

"There," said Mr. Goodman; "now we have a fine view of a rough sea, and can enjoy the stiff breeze. You see in the distance that the sea is not so calm as it is here. It has more room to play about, for there is nothing to break its great waves; but here, under our feet, the long lines of waves are broken when they strike against these rocks.

"Land and water almost always form a pretty sight, but they are never finer than when a bold rock is met by a stormy sea. This rock stands straight up at the water's edge, like a giant soldier on the watch against an enemy. The waves come along, rolling and foaming, till they dash against the rock with a roar almost like thunder. They seem as though they were shouting, 'Out of the way. What business have you here?' And the rock is quite silent; it stands calmly and firmly in the sunlight, and the spray is dashed from its breast. The waves go back, quietly for a moment, but when they have got far enough out to take another spring they roll up once more, and rush madly to the shore again."

The boys listened with deep interest, as though they had been hearing a romantic story.

Mr. Goodman then said, "This open place below, partly enclosed by the rocks, is called a '*Bay.*' It is shaped, you see, almost like a horse-shoe. Do you know why it bears that name?"

The boys confessed they did not.

"Have you never," asked their father, "when standing on the lawn at home, noticed the shape of our bay windows?"

"Oh, yes! many times," replied George.

"Then," asked Mr. Goodman, "does it not bend half round, and give more space to the room inside?"

"Of course it does," said George.

The father then explained the likeness of the two, and showed how on either side the shore was almost in a straight line, but looked just at this spot as if some monster had bitten a piece out from between the rocks, so that the sea spread its waters into the shore, and gained a little extra space. From this arch being called a bay, he said, they gave the same name to their window, as the room in the house gaining extra space was like the sea pressing farther forward.

George, pointing to the narrow opening into the land filled with water from the sea a short distance off, asked if that were a bay.

"No," replied the father; "that is called a '*Creek*' (which means a '*crack*' in the land into which the water flows). If it were wider and much deeper, it would be termed a '*Gulf.*'"

While they had been talking, the tide had gone down so far as to leave a strip of land quite dry at the foot of the rocks. The boys wanted to go down to the edge of the water; but how were they to get there? It was too far to jump.

"We must go back a little way," said Mr. Goodman. They passed round the back of one of the rocks, and found a path which had been made where the hill was not so steep. "Away you go, and I will follow at my own pace," said the father.

"Come along, Fred," shouted George; "let us see who gets to the bottom first."

Away they raced, full of glee and fun, and were at the foot of the cliff before their father had walked half-way down. Their running now came to an end, for the beach was very stony, and their feet sank among the pebbles at every step. The father and his sons walked along among the stones till they reached a rock which hung over the beach almost like a shelf, and looked as if it might fall over and crush them.

CLIFF.—ARCHING OF LOWER PART OF ROCK.

Mr. Goodman asked the boys if they could guess how the lower part had been cut out, and George said that, perhaps, the boatmen had scraped it out to make a place of shelter in a storm.

"A good thought, and not without reason," was the father's reply; "but not exactly right. What is it that brings the soil down from the hills after a storm?"

"The rain," called out both the boys at once.

"Exactly," said Mr. Goodman.

"But," replied George, "the rain cannot have washed out all this hollow place under the rock."

"No," said the father, "but the sea-water acts in a similar manner. We have seen the strong waves come rolling up the shore and dash at the foot of this rock."

"Do you mean the tide, father?" asked little Fred.

"Yes," was the reply. "You remember how the tide rolls up the land farther and farther for a while, and then returns step by step till it is very low indeed?"

"Oh, yes!" said George; "coming up to its highest place every twelve hours."

"Exactly so," said Mr. Goodman. "Well,

just now it is going down, and so leaves room for us to stand here under this cliff. But in a few hours the busy waves will roll over the spot where we now rest, and will rush into this hollow place with a force that will carry stones along, and dash them forward till they chip small grains off the rock, and scoop it out a little more. It is just in this way that the cliff, which was once upright, is now losing its lower part, and you may be sure that this ledge will come toppling over when its support has been carved out a few feet more."

George and Fred both said that they hoped it would not fall while they stood there.

"Scarcely likely," replied their father. "Perhaps it will come down a piece at a time; but come down it must in the end. And in falling so far it will no doubt break in pieces; and then the waves will roll the stones over the lumps, day by day, and grind off their sharp corners until they become pebbles, just like these which form the floor where we are now standing."

"And is that the way pebbles are made, father?" asked Master George; to which Mr. Goodman replied, "There is no other way. All these stones, large or small, once formed part of rocks, some, perhaps, of the very rocks we are looking at, and many were washed here by the sea from other places. In some parts we see only sand washed up by the sea; but sand is made of pebbles, which are ground by the sea to powder."

watch	**bus′-y**	**sun′-light**	**an-oth′-er**
piece	**sol′-dier**	**horse′-shoe**	**list′-en-ed**
beach	**peb′-bles**	**sim′-i-lar**	**bus′-i-ness**

Bay, a bend of the sea into the land, with a wide entrance.

Gulf, an inlet of the sea, cutting deeply into the land, most often with a narrow entrance.

Creek, a small and narrow inlet of the sea

Wind′-ing, bending, twisting.	**Mon′-ster,** very large and strange.
Ro-man′-tic, fanciful.	**Ex-act′-ly,** quite.
Con-fess-ed′, owned.	**Carv′-ed,** cut into shape.

DICTATION EXERCISE.

The sea-shore is sometimes covered with fine sand, and sometimes with pebbles. In some places there are rocks only; and these are often covered with sea-plants. In some places the coast is low, and at others the sea is met by tall cliffs.

LESSON IV.

Cape.—Head.—Headland.—Harbour.—Haven.—Road.—Roadstead.

Mr. Goodman knew that the proper way to impress his lessons was to make his sons happy while learning. He asked if they would like to go in a boat, and you may be sure that they were very pleased with the offer.

They returned to the town, and after dinner were seated in a boat, for the sea had become very calm since the early morning. They had not been gone more than an hour when the boys were charmed with the sight of a high cliff that seemed to frown like a giant on the sea beneath.

"Do you know," asked Mr. Goodman, "what that high place is called?"

"No, father, except a cliff," replied George.

"It is called a '*Cape*,'" said his father.

"What a funny name! Why, I wore a cape last winter," exclaimed Fred.

"Yes," said the father, "it sounds strange to you, but there is a good reason for it. When sailors see from afar a bold piece of shore standing high, and pointing into the water, the sight appears like that of a great beast lying down with its '*head*' to the sea. It was some fancy of this kind that led sailors to call such places '*heads*.'"

"I thought you said, father, they were named *capes*," was the remark of Master George, who did not soon forget what he had once heard.

"Just so," replied the father; "but *cape* in a foreign language means *head*, and so *headlands* are spoken of as *capes*. Fred says he wore a cape last winter. Now the reason why such garments are called capes is this, that very old-fashioned capes used always to have hoods to cover the head. They were looked upon as garments to cover the head rather than the shoulders, and hence they were called, in a foreign language, *cape*, because cape means head. It seems very odd that a great hill standing out into the sea should be called by the same name as a little boy's cape; but now we see the reason of it. The one looks like a head, and the other was once made to cover the head; hence they are each called *cape* or *head*."

In answer to a question from George, whether the waves ever threw ships against that rock, the boatman said he had known one case. "In bad weather," he said, "to avoid wreck, the sailors try to get into '*Harbour.*'"

"A harbour—what is that?" asked little Fred; and the old man replied by asking the boy where he would run to, on land, when a storm came on.

HARBOUR.

Fred said, at once, "To some place of shelter."

"That is just what sailors do when they can," said the boatman. "When a storm is coming on they try to find a '*haven*,' or '*harbour*,' a place for their ships sheltered from the strong winds and rough waves. You have seen the 'Look-out' tower near the town, with a sort of square basin?"

George and Fred both said they had.

"That basin," said the old man, "is a '*harbour*,' as fine as any walled basin on the coast. Some natural harbours are arms of the sea—that is, a place where the sea runs a long way into the land, as if it stretched its arms into it. There ships may be safe from the wind and waves."

"But," said Master George, "they cannot always find such places, I should think."

"No," replied the boatman. "In rocky and shallow places vessels may be dashed ashore, or perhaps on to a rock that lies only a few feet under water, and be broken to pieces. Although so near land as we are, in a wreck the brave sailors might be all drowned; for it's no easy matter to swim in a rough sea. Very likely that piece of timber which you see floating here is part of a vessel that's gone to pieces."

"And what," asked little Fred, "would they do if they could not find a harbour?"

The old boatman explained that they must either ride out at sea and bear with the bad weather, or seek some shallow part where the vessel could lie at anchor—some "*Roads*," or

"*Roadsteads*," which means a narrow passage of water where the power of the wind and waves could not reach in full force. They are called *roads* of the sea, because they are almost as safe and smooth as are the roads on land.

The wind being bleak and the sky becoming dark, as though a storm were coming on, the party returned as quickly as possible; and it was arranged to pay a visit on the morrow to an island a few miles off.

---

calm
square
bleak
weath'-er
rough
piece
learn'-ing
stretch'-ed
road'-stead
lan'guage
pleas'-ed
shoul'-der

Cape, a point of land jutting out into the sea.
Head, head-land, a lofty cape.
Har-bour, ha-ven, a place where ships are sheltered from the sea.
Roads, roadstead, a sheltered stretch of sea.

Im-press', fix in.
Frown, to look as if in anger.
For'-eign, belonging to another country.
Na'-tu-ral, made by nature, not by man.
Shal'-low, not deep.

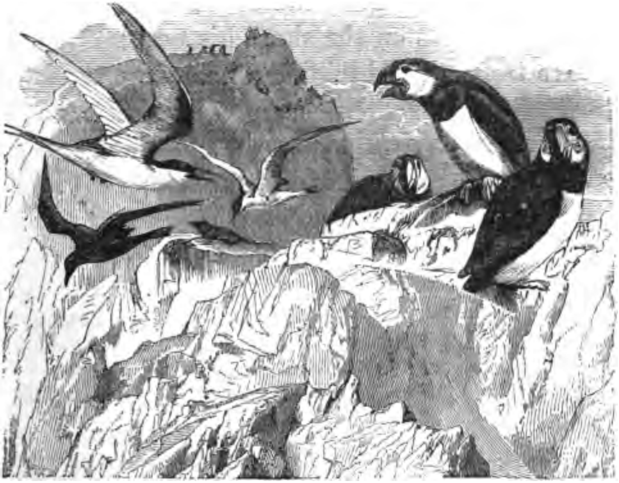
DICTATION EXERCISE.

Bays, and gulfs, and harbours, and roadsteads have their uses. They form places of refuge during storms, and they bring the ships closer into the land to load and unload their wares. Without havens, either natural or made by art, no foreign trade could be carried on.

LESSON V.

The Sea-Gull.

The white sea-gull, the wild sea-gull,
A joyful bird is he,
As he lies like a cradled thing at rest
In the arms of a sunny sea!



SEA-BIRDS.

The little waves rock to and fro,
And the white gull lies asleep,
As the fisher's bark with breeze and tide,
Goes merrily over the deep.

The white sea-gull, the bold sea-gull,
A joyful bird is he;
He sits like a king, in calm repose,
On the breast of the heaving sea!
The waves leap up, the wild wind blows,
And the gulls together crowd,
And wheel about, and madly scream
To the sea that is roaring loud.

The white sea-gull, the bold sea-gull,
He makes on the shore his nest;
He tries what the inland fields may be,
But he loveth the sea the best!
And away from land, a thousand miles,
He goes 'mid the surging foam;—
What matter to him is land or shore,
For the sea is his truest home!

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crowd
wheel
breast
tries
breeze
scream
white
fields
mer′-ri-ly
roar′-ing
lov-eth
thou-sand
heav′-ing
cra′-dled
tru-est
sea-gull

Re-pose′, quiet, rest.
Heav-ing, swelling up and sinking again, like the breast of a breathing being.
Surg′-ing, boiling up.
In-land, away from the sea.

LESSON VI.

NESS.—PROMONTORY.—POINT.—PENINSULA.

"SIT still and be steady, boys," cried Mr. Goodman, as he and his sons took their seats in the boat which they had hired for the day. The boys did as their father bade them, and the boat was quickly out a good distance, for the sea was very calm, scarcely a breath of air stirring. They passed by a high headland, on which many thousands of sea-birds made their nests; and a little farther along the coast they sighted another cliff—one that stood forward a long way into the water.

"Do you see that rock pointing towards us?" asked the parent.

"Yes, father," replied George; "that is a cape, is it not?"

"It is," said Mr. Goodman, "and it looks as if it were poking out from the face of the land. For that reason a cape is sometimes called a naze."

"Why is that?" asked little Fred.

"The nose," said the father, "stands out from the face more than any other part does; and so, when sailors in olden times saw a sharp rock pointing towards them into the sea, they thought it looked like a nose on the face of the land. I know a long cape which is called the *Naze.* This is just the same word as 'nose,' only spoken with a slight change of sound. A thousand years ago many fierce and hardy sailors used to come from lands over the sea to England. They did not say 'nose,' as we do; they said something like 'naze.' This was often shortened into '*ness;*' and thus many capes in England are termed 'ness,' such as Cross*ness.*"

A NESS.

Master George asked if all capes were as large as those they had seen about there.

His father replied that they varied very much in size, and were known by several names. He added, "When a cape stands very high it is called a '*Promontory*,' and if rather low it is known as a '*Point*,' as it is then like a piece of the land pointing out farther than the line of land on either side. Can you remember these names and their meanings, do you think?"

George showed that he did not forget, for he replied, "*Cape* is a foreign word for 'head,' *ness* is another word for 'nose,' a high cape is a *promontory*, and a low one is a *point*."

"Very good!" said Mr. Goodman. "You have told me that sometimes one name is used, and sometimes another; now can you tell me the reason for it? Why is a cape sometimes called 'head,' and at others 'ness'?"

"Because," answered his son, "when we are sailing on the sea, a high piece of the shore looks like a great beast lying down, with its head to the sea."

"Yes," said Fred, "and when the land points out very far, it looks like a nose on the face of the land; and so it is called 'ness,' which means 'nose.'"

"Well done," said his father; "but what is the cape or head really made of?"

To this George replied, "Why, of land, to be sure."

"Good," said the father; "and because it is a *head* of *land*, men often call it a '*headland*' as well as a 'cape.' But the land may stretch so far into the sea as to look too long even for a nose, and not high enough for a head. Then it stands out like a long finger pointing from the land, with water on both sides of it and at the end; and we call it a *peninsula*. Generally a peninsula is larger than a cape."

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fierce
breath
beast
stead′-y
stir′-ring
re-al′-i-ty
slight
e-nough

Ness, naze, a nose of land, a cape.
Pro′-mon-to-ry, a large and high cape.
Point, a small cape; generally not higher than the coast on either hand.
Pen-in′-su-la, a portion of land nearly surrounded by water.

DICTATION EXERCISE.

If we sail in a boat along the coast we shall find the edge of the land to be very much broken. Here a tall wedge-like cliff; there a bold headland; here a long peninsula; there a low cape. These all push forward, like giant fingers, to meet the ever-rolling waves.

LESSON VII.

ISLAND.—MAINLAND.

THEY rowed past the cape for about an hour, and the father asked the boys many questions about the shore as they went along. He showed them how the banks were not the same all the way: sometimes they stood high, like very small capes or points; at others the sea had washed a piece of the bank away, and made a bay. And at last they reached an island, where they tied the boat to a large stone near the water's edge; and they rested for a time.

The boys got out of the boat, walked about the island, and saw many birds and trees and flowers. "I wonder what they call this island!" said Fred; and when they had returned to the boat George named the place Boat Island, to mark the voyage they had made to it in a boat.

"Now, boys, shall we row round the island?" asked Mr. Goodman.

"*Can* we do so, father?" rejoined one of the youths.

"Yes," said Mr. Goodman; "we shall have

plenty of time to go round the isle, and get back to the mainland before dark."

"Did you say *Isle* or *Island*, father?"

"I said 'Isle,'" the parent replied, "which is another name for Island. Do you know why this is called an island?"

AN ISLAND.

"Because," said George, "it has water all round it."

"That," said the father, "is very good; but I will tell you how you may remember the name. An island is like an *eye* of *land** peeping out of the sea; and thus it must have water all round it."

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* Pupils, however, should not be allowed to think that this is the *derivation* of the word.

Then they took their seats in the boat once more, and rowed near to the land; and they found that the edge of even that little island was not regular all the way. There were capes and bays, and noses pointing into the sea, just as on the shore they had left in the morning, but very much smaller. In about half an hour, they found themselves at the very spot they had started from, just as a fly would in crawling round a table; and so they knew that the land had water on all sides, which made it an island.

"We had better make our way back now, or it will be dark before we get to the shore," said the father.

"Yes, let us go to the land again," said George. He had not quite learned his lesson, for he seemed not to know that the island was *land* as well. The father made the lesson clear by showing that the shore was called the *mainland*, or the chief land, because it stretched a long way, while the land they were leaving was only small, so small as to look like an *eye* of *land* peeping out of the sea; at least, so it seemed to them when they stood on the cliff a few days before.

And so it is always; when we are on a small patch of land, with water all round it, we call a larger piece of land the *main*land. The country in which we live has water all round it, and is therefore an island; but it is a very large one—thousands of times larger than the little one round which Fred and George and their father rowed in about half an hour.

That little island was only one mile round; but the island called Great Britain is about three thousand miles round—yet it is an island, because there is water all round it. And if we were to sail in a boat along the coast all round this great island, we should see many—very many—*bays*, where we could find places at which to get ashore. And many *gulfs*, too, where the sea runs like a channel into the land; and harbours to shelter ships; and great capes, or heads of land, frowning like giants; and long pieces of land pointing like noses (or nesses) far into the sea; and promontories with their bleak tops, and cliffs of rock or of soil, and large spaces or plains of low land—low enough to be almost level with the sea. We should see many "*Rivers*," too (of which you will learn more another time), bringing their waters from the hills, and emptying them into the sea. Some of these rivers have *mouths* so wide that it would take us a long time to sail across from one side (or "*bank*") to the other, and some are very narrow indeed.

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patch
plains
row′-ed
riv′-ers
nar′-row
in-deed′
crawl′-ing
shew′-ing
shel′-ter
stretch-ed
flow′-ers
ques′-tions

Isl′-and, a portion of land entirely surrounded by water.
Main′-land, chief land, the land larger than some neighbouring island.

Voy′-age, a journey by water.
A-shor′e, on land.
Re-join′-ed, answered, replied.
Reg-u-lar, according to rule; spoken of all lines and figures formed according to rule.

DICTATION EXERCISES.

I.

Capes vary much in size, and are known by many names. A very high cape is a promontory or headland; a low cape is a ness or a point. All capes are peninsulas, because they have water on three sides; but the name peninsula is usually given only to masses of land larger than capes.

II.

An island is a piece of land having water all round it. Islands are of all sizes. Some are hundreds of miles round; others are so small as to be merely rocks raising their heads above the surface of the water.

LESSON VIII.

BASE OF PENINSULA.—ISTHMUS.—COUNTRY.—CONTINENT.—ARCHIPELAGO.

THE party, on leaving the island, crossed the "*Strait*," or the narrow passage of water between the island and the mainland, and returned homeward, keeping the boat as near to the "*Coast*," or shore, as possible. They found that the tide had gone down since they passed that way in the morning on their voyage to the island. The edge of the mainland was changed in shape, for the sea had left bare some places which it had covered when the tide was up.

"There," said the father, "you see that the *peninsula*, which pointed like a finger a little way into the sea this morning, stands farther out still now. The sea covered a part of it before, and has now gone down, exposing a further part of the land, and making the bare part longer. It stands out like a long peak. Can you tell me what that part is called that joins the mainland?"

The boys could not answer; and their father explained: "It is the '*Base*,' or broadest part; just as we should say of that part of the peak which is sewn on to your cap. When we look at a sugar-loaf standing upright on a table, we call the thickest part the *base;* and that peninsula is like a sugar-loaf in shape, laid down on its side, with the top pointing into the sea, and the base joined on to the mainland."

"So it is!" replied one of the boys.

"And that *peninsula* there," said Mr. Goodman, "which you see farther on, is shaped like a spoon; it looks like a long handle reaching from the mainland, with a head like that of a spoon or a battledore at the end of it. They are both called peninsulas, because there is water all round, except where they join the land. But this one, you see, has no *base;* it is not like a sugar-loaf lying down. That narrow arm is an '*Isthmus*,' which means a *neck;* and it is not unlike a neck of land, with the *peninsula* for a head. Now the tide is down we see many things that were hidden by the water when we started out this morning. The island that we left an hour ago is the top of a little mountain which is buried by water, all except its crown, which we saw peeping out of the sea. All islands are hills whose tops are high enough to stand above the water. Great Britain is a large tract of land raising its head above the sea; but there are many islands very much larger even than that on which we dwell."

"What! father," asked George, "islands more than three thousand miles round?"

"Oh yes, my boy!" he said; "there is a great country called Australia, which you will know more about as you grow older; it is many, many times as large as Britain, but it is an island for all that, for it has water all round it."

"Is there any piece of land," asked Fred, "which has not got water on all sides?"

"No; none!" was the father's reply.

"Then all lands, whether large or small, must be islands," said George.

"True," Mr. Goodman said, "so they are. But there are some long pieces of land which do not all belong to one country. You have heard of France and Holland, of Germany and Russia, have you not?"

"Yes, father," George answered.

"Well," said the parent, "they are different countries, without any sea to divide them. They are all *contained* in one length of unbroken land. They are *continued*, one after another, so that you could travel on land through all those countries. But if you went from England to any other country you must cross the water. As you cannot get out of Britain without crossing the sea, you know that Britain is an *island.* If you went from France to Belgium you need not go on the sea, but could go on land; and again from Belgium to Holland, and from Holland to Germany, and Austria, and Russia. These lands are all connected, or *continued*, like links in a chain, and because they are *contained* in one land, that land is called a '*Continent.*' And when you have gone from one end of the '*Continent*' to the other, you come to the sea again; and so the whole continent is a very large island."

"What are those small black things near to the shore?" asked little Fred.

"Those," replied the father, "are little black rocks that were buried by the sea this morning; now the water has gone down so low as to leave them bare."

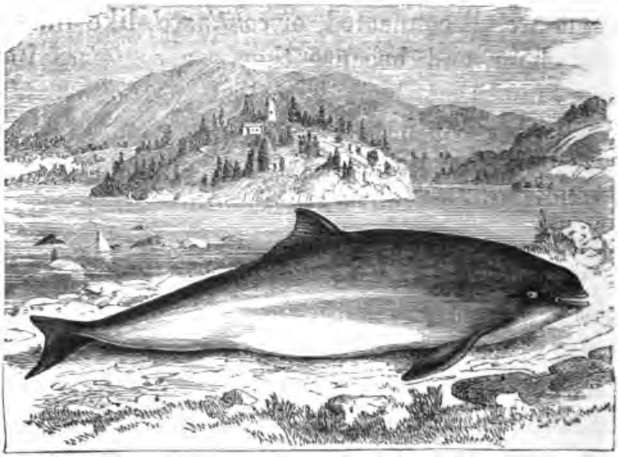
"I suppose," said George, "they are islands, for they seem to peep out of the sea."

Mr. Goodman said, "Exactly so: they are each an island, and they form a large cluster; but being very small, they are sometimes termed '*Islets.*'"

"What a large number of them!" called out Master Fred.

"Yes," said the father, "there is a large *group* of them; and a 'group' or 'cluster' of islands is known as an '*Archipelago.*'"

"What is that, father?" asked one of the boys; and he had scarcely asked his question, when a large black patch was seen a few yards off. What do you think it was? The dark band of water was made by a shoal of porpoises—large fellows that raise their noses out of the water to breathe. They swim in large numbers, and drive the herrings and other fish, pursuing them as a dog does a hare. The boys were alarmed at first, but soon learned that



PORPOISE.

the sportive creatures would do no harm. They often came so close to the boat as almost to be struck by the oars. The porpoises are quite black, and look like a parcel of hogs rolling about in the waves. And this ended the day's pleasure, for the boat was soon in the bay, and the party got ashore.

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sown
bur'-i-ed
e-nough'
group
isl'-ets
pleas'-ure
por'-poise
con-tin'-u-ed

Strait, a narrow passage of water.
Coast, the border of land along the sea.
Isth'-mus, a narrow neck of land with water on each side.
Con'-ti-nent, the largest portion of land; land continued without sea between.

Ex-pos'-ing, making bare or naked.
Con-nect'-ed, joined.
Clus'-ter, a bunch or group.
Pur-su'-ing, chasing.
Sport'-ive, playful.

Dictation Exercises.

I.

The water which lies between an island and the mainland, or between two islands, is called a strait; or if very wide, a channel. A strait, or a channel, connects two larger portions of water.

II.

A continent means continued land, and contains many countries.. There are four, or, as some say, five, continents. Some of these are joined together, and form very large islands.

LESSON IX.

MOUNTAINS.—HILLS.—RANGE.—CHAIN.—GROUP.—RIDGE.—CREST.—BASE.—SUMMIT.—SPURS.—MOUNTAIN PASS.

A HEAVY rain-storm came on in the night, and startled the lads as they lay in bed. But the warm sun broke forth in the morning, and lit up the trees and grass, and made a charming scene.

"Wake up, boys!" said Mr. Goodman; "to-day we will take a drive for a few miles in the country."

The youths were quickly dressed, and as soon as breakfast was over the father and his sons were on the way from the town to the distant hills; for the weather had become fine, and the roads were being dried by a smart breeze and the warm sun.

"We shall find the country about this district very different from the level fields round our home," said Mr. Goodman. "We live, as you know, where the ground is quite level; but here we shall find steep hills in plenty for us to drive up and down.

"There," said Mr. Goodman, pointing forward, "see what a fine range of hills there is before us, and another range behind, and still another, with deep hollow places between!"

"Oh, that *is* a pretty sight!" said little Fred.

"You remember," said the father, "the long waves that came rolling on to the shore last evening, and how each line of waves was followed by others; and also the hollow spaces between them?"

"Yes," replied the boy.

"Do you see any likeness of them before you?" asked Mr. Goodman.

The boy replied that he did not; and then his father tried to make him understand, by showing that the long rows of hills were very much like the waves, and the deep places between them like the hollows between two lines of waves.

"The longer you look," said Mr. Goodman, "the more you will see the likeness, only the one scene is on land and the other on water. The high parts of the land are called "*Hills*," and when *very* high they are known as '*Mountains*.' You remember that, when looking at the sea the other day, I told you that when the waves leaped very high we called them 'mountain waves,' because they mounted so high in the air. The same applies to very

MOUNTAIN RANGES.

lofty hills—they seem to *mount* towards the sky, and are termed 'mountains.'"

In answer to a question from one of the boys, the father described some mountains as being so high that their tops seemed to touch the clouds, and others so far above the level of the warm earth as to be always capped with snow. And then he pointed out the fact that the top of the range was not even like a long bank, but notched almost like the teeth of a saw. "To deserve the name of a mountain," he said, "it should be a hundred times as high as our house; if lower than that it would be termed a *hill*. There are some mountains across the sea a thousand times as high as the old house at home."

"What do you mean by a *range?*" asked George, to which his father replied, "A range of mountains means a number of hills standing in a row, touching one another, almost like the links in a chain; and for that reason we sometimes speak of them as a mountain '*chain*.' And the line of the range above which the chief peaks rise is called the '*crest*,' or '*ridge*.'"

George wondered whether mountains were always ranged in rows, and was informed by his father that they sometimes stood in "*groups*," which he explained thus: "When a family of children sit round a table we say that is a family *group ;* a number of marbles put down in a ring would be termed a *group* of marbles; several things put together, without any regular order, form a *group ;* and from this you will easily see that a number of mountains dotted about, near to one another, is a *group* of mountains, whether their feet touch one another or not."

GROUP OF HILLS.

"Did you say that mountains have *feet*, father ?" asked Fred.

"Yes," was the reply. "The lowest part is called the '*Foot*' (or '*Base*'), and the highest part the '*Crown*' (or '*Summit*'); just as your lowest part is known as the 'foot,' and the highest the 'crown.' And you may see, standing out sideways from the feet or bases of a chain of hills, strong branches called '*spurs;*' as they stand out from the feet of a mountain range, they remind us of the *spurs* standing out from the heels of the huntsman. These spurs are like props to support the range of lofty hills, just as strong roots in the ground spread out and keep the tall trees from falling; and for the reason that they often lie in rows, looking like the ribs of a back-bone, they are often called '*ribs.*'"

Little Fred asked if the tops of the mountains were very cold; and he seemed amazed on being told that the summits of many of the very high ones were covered with snow all the year round.

"And those tall ranges," Mr. Goodman said, "may divide one country from another, forming a high mountain wall over which the people on either side cannot climb."

"Then," asked George, "do the people on the one side never see those on the other?"

"Some of them," said the father, "travel across the mountain range, although they cannot get over the top. You wonder how that can be, I suppose?"

"Yes, father," replied both boys at once.

"There are in some places," Mr. Goodman

MOUNTAIN PASS.

explained, "cracks or glens across the mountain chains, and perhaps a place where two hills do not touch each other except at their feet; then the people use the hollow place as a road, and 'pass' along the opening to the other side of the range. What do you suppose such a road is called?"

Neither of the boys could guess.

"Why," said the father, "for the reason that the people 'pass' along this hollow place, it is termed a '*Pass.*'"

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scene
steep
peaks
ridge
guess
climb
dress'-ed
trav'-el
like'-ness
notch'-ed
neith'-er
ev'-en-ing

Moun'-tain, land rising more or less steeply to a great height.
Hill, a little mountain.
Mountain Range, a row of mountains.
Pass, a passage between the tops through a mountain range.

Start'-led, struck with sudden fright.
Cap'-ped, covered at the top.
De-scribe', to show or explain.
A-maz'-ed, surprised.

DICTATION EXERCISE.

A mountain is a mass of land which rises more or less steeply to a great height. The bottom of the mountain is the foot, or base; the top is the crown, or summit. The tops of the highest mountains are always covered with snow; and the passes across them are full of danger.

LESSON X.

VOLCANO.—CRATER.—VALLEYS.—VALES.—DALES.—DELLS.—GLEN.—PLAIN.—PLATEAU.

"ARE mountains always in ranges or groups? Do they never stand alone?" George asked, after a short rest; and Mr. Goodman replied that they seldom stood singly, for the reason that the same cause which made one mountain would make more, except when fire rose out of the earth, and pushed the soil up to a great height. Then it was a "*Volcano,*" meaning a *burning mountain.*

"There are many hundreds of volcanoes in the world," he said; "but there are none in this country, or I would take you to see some of them. A volcano is a hole which reaches a long way down through the crust of the earth, up which dust and cinders and melted rock are forced by fire from the bottom. As the rubbish is blown out at the top it rolls over the side of the hole, which is called the '*Crater,*' and so makes a sloping bank all round, which at last becomes so high as to be a mountain, and its shape is like that of a sugar-loaf.

"Do you see those hollow places between

A VOLCANO.

the hills?" said Mr. Goodman; "they are called '*Valleys*,' or '*Vales*.' Sometimes they are long grooves like those you see before us, and sometimes they are very broad. Very small valleys are often called '*Dales*,' and still

A GORGE.

more tiny ones are known as '*Dells*,' which mean little dales."

"Then all hollow places are valleys?" said George.

"Strictly speaking, that is right," replied the father; "but we give different names to explain what kind of valleys they are. Some very narrow valleys are called '*Glens*.' Others, which appear to be merely narrow slits between rocks, are called '*Gorges*.'"

"Are there not some places, father, so flat that they are neither hills nor valleys?"

"Yes," replied Mr. Goodman, "there are some places that are almost level, like the one at home. Our own district, you know, is very flat. There is only one hill near to the houses, the one on which the old windmill stands."

The party drove back to the cottage by another road than the one by which they had come. They took a longer way back, leaving the hills to their left, and drove across a wide, even space, which, George said, was the very kind of space they had been talking about. It had neither hills nor valleys, but was quite, or almost, level. And the broad space was watered by a pretty river that wound its way across the plain.

Mr. Goodman told the boys that the even

space was called a "*Plain;*" and George, of course, asked why it was so named.

The boys' father told them that a "*plain*" was a large piece of ground, almost, if not quite, level—like the broad and open space over which they were driving. And, if it were a considerable height above the level of the sea, it would be called a "*plateau,*" or table-land.

Mr. Goodman added, "The word *plain* means smooth, easy, straightforward; so when the land is smooth, we say it is a plain; when anything is easy to understand, we say that it is very plain; and when any one asks us something in a straightforward manner, we say that is a plain question.

"There is a wide difference between the uses, as well as the appearance, of hills and plains. Hills have their uses—they shelter us from bleak winds. If the cottage in which we slept last night had not been in the town, which has hills behind it, we might have had the roof shaken over our heads. The wind must have howled across this open space last night, and have been very strong and keen, for there are no hills for a long distance to break its force.

"Plains, however, have a beauty of their own, though not the same sort of grandeur as mountains. They give us to feel what a deal of room there is in the world for all of us. They make us to see more things at once than we can in a mountain land, unless we take the trouble to climb to the summits. And when the setting sun shines over a long-stretching plain, it makes us think of a beautiful home in a golden city very far away."

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broad
height
piece
groove
sum-mit
su-gar loaf
cin′-ders
talk-ing
dis′-trict
grand′-eur
dif-fer-ence
beau′-ti-ful

Vol-ca′-no, a burning mountain.
Cra′-ter, the hollow or cup in a volcano from which the fire bursts forth.
Val′-ley, vale, a hollow between or among mountains.
Dale, a small valley.
Dell, a little dale.
Glen, a narrow valley.
Gorge, a rocky glen.
Plain, low, flat land.
Pla-teau′, tableland, high, flat land.

Dictation Exercise.

The hollow places between hills and mountains are called valleys, or vales. When small they are named dales, or dells, and when very narrow, glens, or gorges. A low-level tract of country is called a plain. A high-level tract is called a plateau.

LESSON XI.

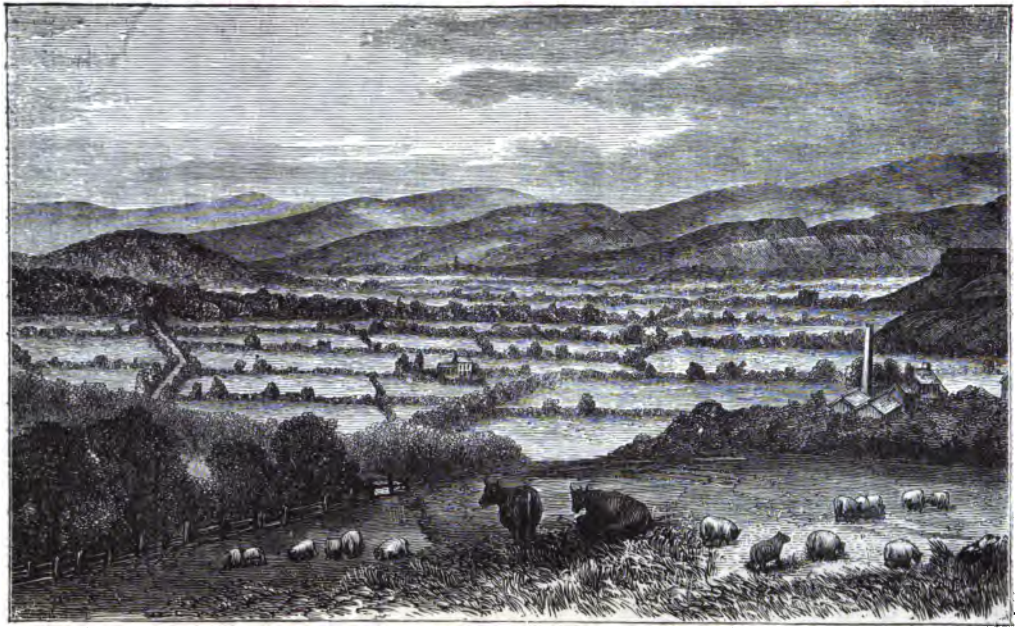
RIVER.—MOUTH.—DELTA.—COURSE.—TRIBUTARY.—CURRENT.—BANKS.—BED.—CHANNEL.—RIVER BASIN.—WATERSHED.—GLACIERS.—ICEBERGS.

"TO-DAY," said Mr. Goodman, "we will walk along the bank of the river that we saw winding through the plain a few days ago, and I will show you how rivers are made."

The boys were soon ready, and pleased with the prospect, and in less than an hour they were at the place at which the "*River*" gives up its waters to the sea. The stream was wide, and, as Mr. Goodman said, it seemed to open a wide mouth, for the place where a river opens into the sea is called its "*Mouth.*" In the centre of that mouth was a large patch of sand, which George took to be the tongue; but he was not quite right, for it is called a "*Delta,*" which is the name of a letter of the same shape, Δ, in the Greek language.

George, pointing to the high hills in the distance—the very hills to which they had driven the day before—asked his father whether mountains and hills had any other uses than to afford shelter from the winds.

"Oh, yes!" Mr. Goodman replied. "Look



PLAIN, WITH HILLS IN THE DISTANCE.

at those tall heights, whose dark sides are laced with bright streams like strips of silver. Out of every crack and cranny, the rain which fell the other night is trickling down the slopes till it gets into a hollow place, and is forming streams that make the hollows still deeper, bringing down mud as you have often seen streams do in the muddy streets during a smart shower of rain. And as they reach the bottom (or base) of the hills, many of them join together, and make the wide river which travels across this plain and flows into the sea."

Little Fred asked whether all streams ran to the sea.

"Yes," replied his father, "the deep sea is the home for nearly all rivers. You see that the stream runs in one direction only—from the hills down to the plain, and then to the sea, which is lower still. You never find water running *up*-hill. In the streets, during a storm, it always moves *down*, and not *up*, the road, and at last it falls into a gutter or ditch. All streams run in valleys or through plains, seeking lower ground as they go, until they reach the sea, which is the lowest valley of all."

To trace the course of the river near which they were standing they marched along the bank to find its starting-point. The whole party walked sharply across the plain, passing many tufts of rushes which grow only where the land is low and damp. The walk was up-hill all the way, for they met the stream.

"Why does the river turn about, instead of going in a straight line?" asked George.

"Because," replied his father, "it is on low ground. When we reach the hills, we shall find the stream leaping over cliffs and skipping quickly down steep places. Then it is not easily stopped in its *course.* But when it gets down on to ground which is almost level it runs more slowly, and is soon turned aside by stones, or even hard patches of soil, and so it winds about like the folds of a serpent."

After they had walked for about two hours they found a place where another stream ran into the river, and then they rested for a while. "This little stream which runs into the larger one," said Mr. Goodman, "brings a *tribute* to the river. When a weaker country pays money to a stronger it is said to give tribute; when people in other lands pay money towards helping our king or queen to govern them, and to make roads or railways, it is called paying tribute; and when we say anything in praise of a friend so as to increase his honour, it is said to be a tribute to him. From this you will see why this little stream is named a '*Tributary*'—because it *contributes*, or pays a *tribute*, or gift, of its waters to swell the river. It is also called an '*Affluent*,' which means a 'flowing to,' because it 'flows to' the greater stream; and the place where the two waters meet is known as a *confluence*, which means a 'flowing together.' There is another kind of stream, called a '*Torrent*,' which flows only in the winter or rainy season, and in summer is dry or much reduced, leaving a wide bed of stones and sand, with a narrow stream trickling down the middle."

When the little lesson was over, the father and the boys went higher *up* the river towards the hills, for the farther they walked the higher was the ground. In time they reached a pretty waterfall, where the stream leaped over a little cliff into a pool below: they were then in a glen.

And when they had climbed the steep path at the side of the waterfall, they saw the narrow stream looking like a band of silver racing from the hill above—too small to be called a river, but known as a "*Brook*," or

"*Rivulet*," which are names for a little river. Then they walked still farther till they saw the stream gushing out of the side of a rock.

"There!" said Mr. Goodman; "this *spring*—

WATERFALL.

I mean the water 'springing' out of the rock—is the '*Source*' of the river. This is the birthplace of the river which we saw emptying its waters into the sea. The whole distance from the source to the mouth is the '*Course*' of the stream; and the running of the stream is its '*Current*,' for current means running or flowing. You see that the water flows always in one direction—down, down, down from these high hills, washing soil away as it goes, making a deep hollow, which is called the '*Bed*.' The sides, which are like walls to keep it in its place, are called '*Banks*,' and the groove between the banks is known as the '*Channel*.'

"You see that we are standing in a hollow place, with the hills sloping down towards the river. We seem to be in a kind of basin, and the tops of the hills form a rim, and this hollow space is really called a '*Basin*,' down whose sides the water rolls into the valley at the bottom, which is the bed of the river. The stream 'drains' away all the water from the sloping sides of the basin, and this process is called '*Drainage*.' You notice the ridge of hills that forms the rim to the basin?"

The boys replied that they did.

"You can easily understand that there are slopes on the other side of that ridge, forming another basin down which water runs?"

This seemed quite clear to both George and Fred.

"That ridge," said Mr. Goodman, "*parts* the *waters* of this basin from those of the other basin, and is for that reason called a '*Water-parting*,' or a '*Water-shed*,' for it *sheds* one set of streams down towards us, and another set down the slopes on the other side."

"Father," asked George, "where does all the water come from?"

"It all comes from the 'chambers of the sky,' my boy," was the answer; "and it all flows away to the sea, which may be termed the 'chambers of the earth.' You can always tell which way the land slopes by the course of the stream. Sometimes the water, which falls as rain or snow, lies in large patches of moss, and gently oozes out so as to form a stream, instead of springing out of a rock. You have seen how a piece of sponge will hold water, and when left on the table will let the water out slowly till the table becomes quite wet?"

"Yes, father," said little Fred, "I have seen that when using a sponge to clean my slate."

"That," said Mr. Goodman, "is the way in which many rivers begin. The large patches of grass and moss on the hills are very much like a piece of sponge. Rain falls among the moss and fills it up; and snow will in winter melt away, and then the water trickles out slowly for a long time, and makes a running stream which mostly lasts till more rain falls. And the water sparkles out among the ferns, and courses down the hills into the valleys, chattering as it goes, always seeming to long for the sea, whither it is flowing; and the sea is the lowest valley of all."

Master Fred asked whether all rivers were made in this way, and his father replied, "In some parts of the world the rivers are frozen into ice, filling the valleys many hundreds of feet deep, and slowly sliding down into the lower parts. These masses of ice are called '*Glaciers*,' and as they slide down into the warmer air they melt and throw off a stream of water from the lower end—sometimes called the 'toe'—and thus make a river. And, in very cold countries, these glaciers are so large that they will stand out for miles into the sea, and perhaps have huge pieces much larger than one of our churches broken off by the working of the waves and the tide up and down. And these large blocks, called '*Icebergs*,' which means 'mountains of ice,' often float away to sea, to the danger of ships that may be sailing in their course."

tufts
ditch
patch
froz'-en
cur'-rent
trib'-ute
wind'-ing
stop'-ped
cours'e
rail'-ways
con'-flu-ence
emp'-ty-ing

Riv'-er, a body of running water.
Del'-ta, a three-cornered plain through which a river runs by several mouths into the sea.
Trib'-u-ta'-ry, af'-flu-ent, a river that runs into another.
Gla'-ci-ers, masses of ice that slowly slide down valleys.
Ice'-bergs, ice-mountains floating in the sea.

Cran'-ny, chink, open crack.
Trick'-ling, flowing in a gentle [stream, or in drops.
Gush'-ing, flowing suddenly.
Ooz'-es, flows gently.

DICTATION EXERCISES.

I.

The water rises from the sea in vapour, then it gathers into clouds, and the clouds are blown by the winds over the land. The cold air on the tops of the mountains causes the clouds to send down showers of rain, and the water runs down the rills and rivers into the sea.

II.

If there were no sea there could be no clouds; if there were no clouds there could be no rivers, and if there were no rivers the land would be a desert. But cloud and river and sea all work together that the earth may be kept bright and beautiful.

LESSON XII.

STORY OF A DROP OF WATER.

BY the light of a bright lamp in the cottage, the tired party, after they had taken tea, talked of rivers and waterfalls, and springs and mossy heaths. And the boys, who never seemed weary of their father's teaching, were more than ever pleased with this little Story of a Drop of Water,* which Mr. Goodman read from a book that he had taken from home, and from which he had already quoted in his conversations.

Up among the hills there is a dell where a swift little stream rests for a moment, after leaping from the rocks above, before it hurries on toward the sea. It rests in a deep pool, so clear that you might count the pebbles at the bottom; and when the sun shines, the little fish cast a shadow on the white stones. All round about, the ivy clings to the rocks; and near to the spot where the water falls from above, a blue-bell droops over the pool and is sprinkled now and then with the spray of the stream. At the edge of a flower-cup I saw a drop of water hang, and it seemed as if the flower were bending down an ear to listen to what the drop of water had to say. I said to myself, "I will listen too; for if my ears are too dull for such a tiny voice, perhaps my heart can hear." So I listened with my heart, and I will tell you what the drop of water seemed to say.

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* From "First Steps in Geography," slightly altered.

The blue-bell wanted to know all about the travels of the drop. "You restless little drop of water," it said, "where do you come from, and whither are you going? I sit here all the day, in the sunshine and the rain. I am pleased with what God gives me, and I am very happy. I love the stream and the rocks, and the blue sky above; they are all so good to me. But still, before I die, I should like to know what there is outside this little dell. The fishes never speak, and the birds only sing. It makes me glad to hear them; but they sing only about their mates and their little ones, and something else which they say I shall know all about when I am dead. The bees come often to see me, but when I ask them about the world they say they know nothing of it; they have no time to think about anything but honey. So pray, little drop of water, tell me what you have seen."

And the little drop of water said: "Dear pretty blue-bell, I will tell you all I know, for in all my travels I never met with any one fairer than you. But I must be quick, for there are many thousands of us all having a race to the sea, and I cannot bear to be the last. I was born on a calm starry night, and I found myself resting in the bosom of a daisy. I looked round. There were thousands upon thousands just like myself, seeming to come out of the air and to go to sleep on blades of grass and in the cups of flowers. I heard a purling noise of water just below me, and then I could see that there was a tiny little rill pushing its way among the roots of the grass. Then there came a great light, and a little breeze went trembling all among the leaves and flowers. At that a thousand thousand sleeping drops woke up, and, leaping into the little rill, went racing along. I joined them, and we ran on down grassy slopes facing the morning sun. I was so bright and glad then that I ran faster and faster, till I slid over a smooth broad stone, and found myself in a deep, strong stream, between high woody banks. Then, all at once, the world seemed to open out before me. For one moment I could look down a steep mountain height, and away over sunny fields, and waving woods, and curling smoke. For one moment only; then I was lost in a struggling, shouting, whirling maze of drops that seemed to have lost all their senses. Some cried, 'On with you! away!' Others cried, 'Back!' Some said, 'Here, this way!' Others said, 'No, that way!' But not one of us could help himself at all. I was dashed against a hard rock, flung back again, spun round and round, pushed under a shelving stone, and then I took a leap right into the air. Away I went; I was not at all scared, you know, because this was just the sort of thing I was born for. So I flew down, down, down through the air, and I felt the sunbeams rattling against me all the way; and then they would spring back and dance round me in rings of green and gold, and red and blue. You can have no idea how pleasant it was. But it was soon over, and then I found myself at the bottom of a waterfall, in a broad and quiet river. Here I moved on more slowly for some time. Then I was sharply pushed into a narrow channel; and just as I was thinking how this was to end, I was plunged into a deep dark hole, where I had to grope and stumble among the spokes of a great wheel that went splashing round and round. There was a grumbling noise like thunder not far off, but I did not stop to find out what it was; I ran along as fast as I could, and was glad to find myself out in the broad river again.

"By-and-by we came to a town where large ships could float on the water. If you saw them you would wonder how little water-drops such as we are could bear them up; but I suppose we must be very strong, for we felt them no weight at all. 'Now,' we said to one another, 'we shall soon reach the sea.' But that was not so easy as we had thought; for all at once we met a vast host of salt-water drops marching straight against us. 'Let us pass,' we said, 'for our home is in the sea.' But they would not listen; they came pouring along with great force, and drove us back for a mile or two. Then they sharply turned and said, 'Come along—it was only our fun.' And so we all swept out together among the rolling ocean waves. Oh, it is a free and happy life there! No banks to bind you in, no channels to force you this way or that. Rising and falling, rolling and swaying hither and thither, springing into the air, playing with the sunbeams, and then plunging back into the heart of gloomy waves; it is the heaven of water-drops, to which we are always trying to get back.

"But I was not to stay there long that time; a vast foaming billow shook me off its crest. A gust of wind caught me and carried me aloft. Then I fainted in the hot sun, and knew nothing more till I woke again on a bank of silver cloud that glided before the wind towards the distant hills. It was pretty to see the ships with their white sails flitting over the water, and the shadows of the clouds racing over the broad bright surface. But as we floated on we left the sea behind. Nearer and nearer came the hills, growing darker as we reached closer to them. Then a chill, wet wind met us, and we shook with cold; then we began to fall, and knew that we were turned into a shower of rain.

"I fell into a slit in the rock, and groped my way along in the dark through many windings and turnings till, in a moment, I felt a bustle and pushing all round me, and among a troop like myself I burst into the sunlight again, and raced after the rest round and round a rocky basin fringed with fern. After many mazy circles I found my way out, and was hurried along to the top of the fall that brought me to your feet. Farewell! farewell, little flower! Let me away to my heaven in the sea. God tells you to rest here, but to me He gives no rest except in the great sea. No matter where I may be, in cloud or rainbow, or stream or river, always the one thing I crave for is to get back to the sea."

Then the drop fell, and I could see him no more.

breeze
bust'-le
moss'-y
straight
dais'-y
rat'-tling
pleas'-ant
height
float'-ed
hur'-ries
chan'-nel
ba'-sin
teach'-ing
whirl'-ing
rain'-bow
hea'-ven

Heath,	an open waste tract of land.
Maze,	confused mixture.
Purl'-ing,	flowing with a murmuring, broken sound.
Shelv'-ing,	standing out like a shelf.
Slid'-ed,	moved with a gentle, smooth motion.
Fring'-ed,	edged or bordered.

DICTATION EXERCISE.

"*When rain falls on high land, it sinks into the ground, and finds little hollows in which it gathers, and channels through which it runs, until it comes to some opening into the air at a lower level. There it forms a spring.*"

LESSON XIII.

CLOUDS.—RAIN.—GOD'S WATER-WORKS.

"How did you like that story about the Drop of Water?" asked the father, the morning after they read it.

"Oh, it was very pretty, father," replied Fred.

"But is it a true story?" asked George.

The father said that it was true in spirit, if not in fact. He did not wish the boys to think that the Drop of Water could talk and tell a long story about its travels; the writer of the story had at first said that if he could not hear with his ears, perhaps he could with his heart. By this he meant that he knew how a Drop of Water might act and what it would do; and so he told the story of its life as the Drop would have told it if it could speak.

George could not think what became of the water in the sea, for there are always streams running into it.

"Have you never seen the steam rise from hot water, and how the water is at last dried up, as we call it?" asked the father. And then he showed that the steam was only the water made into fine vapour by the heat of the fire. And so it is with the water in the sea. When the warm sun shines on the broad sea, the water rises in a very thin steam—so thin that it cannot be seen—and this steam rises higher and higher till it forms into clouds.

THE CLOUD.

George asked, "Then are those clouds that we see over our heads all made of water?"

"All of water," replied the father; "and they are blown about by the winds over the tops of the hills. They keep the form of clouds so long as they are warm, for it is the warmth of the sun that changes them from heavy water to light steam. And when the clouds strike against the mountains or meet with cold winds they become cold, and are then turned into water again."

Fred was puzzled. He could not think that great sheets of water were floating in the air overhead; but it did not seem strange when he learned that these clouds were broken up into little drops, and fell down to the earth in the form of rain. All the rain-drops are children of the clouds; they come down to us to bless the ground, to feed the plants and flowers, to run down hills and banks into the rills and rivers, and then march on to the sea to be turned again into clouds.

"Oh, how nice!" said George. "I never knew before how the rain was made."

"Yes," said the father, "God has made clouds and rivers and seas to work for one another without resting, and so the earth is kept bright and lovely. The way in which water works is to the earth very much like the motion of the blood in our bodies. If the water of the sea were never changed, it would become impure. If there were no clouds there would be no rivers, and without rain and rivers there would be no plants and no life. God never allows the water to rest. It is always running down from the land to the sea, or rising from the sea in fleecy clouds to fall again to the land. In this way the trees and the flowers, and all birds and beasts, are supplied with fresh water, while the sea is being filled, yet never allowed to overflow."

"I wonder," said Fred, "how the little drops of water can hold large ships up without letting them sink."

"That seems strange to you, my boy," said the father; "but it is the old, old story—many tiny things, when put together, make large ones; each drop of water is tiny and weak, but when thousands of thousands are together they can hold large ships on their shoulders, and they seem to laugh at the weight."

"What did you mean, father," asked George, "when you told us the story about the Drop of Water, and it seemed to say that a host of salt-water drops marched against the stream, and pushed it back for a mile or two?"

"That meant the tide of the sea rolling into the mouth of the river," he replied. "It is just the very kind of thing that I meant when I said just now that many weak and tiny things become strong when they all work with one will. The tide is the motion of the sea, and when the sea rushes into the rivers it sends their waters back, because it is so much stronger than the stream."

"Do the rivers ever run dry, father?" asked Fred.

"Some do, but not many of them," replied their father. "The clouds, you see, are so large, and they give their water so freely, that the rivers have not time to get rid of all their water before the rain comes again to feed them. The sea is always lifting up its voice to the clouds, and the clouds are never at rest, but always sending their blessings on the land in some place or other."

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weight
heav'-ing
steam
puz'-zled
cloud
shoul'-ders

Fleec'-y, looking like wool.
Vap'-our, water in the form when it is invisible (not to be seen).

Dictation Exercise.

"When the rain falls on a mountain moss, a number of little streams or rills are formed in the hollows; and these, uniting together, form the beginning of a river. The grass and moss, with their roots, are like a large sponge, which holds the water for a long while."

LESSON XIV.

Storm and its Effects.

"Good morning, my boys," said Mr. Goodman, when his sons came down-stairs. "Did the storm disturb your sleep in the night?"

"Yes, father," replied George; "the rain pelted against the windows." Little Fred added, "that the lightning flashed and the thunder roared so much that he was quite afraid."

After breakfast they left the cottage, and went down the steep road leading to the sea, and then stood at the bottom of the hill, with their faces turned towards the top.

"There," said Mr. Goodman, "we have a fine lesson in the effect of the water running down this sandy slope. Last night the rain fell in torrents, and filled the grass on the banks with water. Now you see it is trickling out of its hiding-place, and running away down the hill to get to the sea. Do you see how the streams are being made? They are running in little grooves in the sand, till many of them meet at one point, and then they mingle together, each being a *tributary* or *affluent*, to form a larger one. The place where they all meet is a *confluence*, which, you remember, means a ‘flowing together.’ They seem to pick out the softest part of the road, and wash the sand away till they make quite a little lane, and leave the harder part of the ground standing up in ridges between the streams. That is the way in which rivers are made. Those ridges are like mountain *ranges* or *chains*, and the channels filled by the water are *dales* or *valleys* between, and that large patch of bare land in the middle, which is nearly level, is like a great sandy plain.”

“The water does not run straight down,” said George.

“No,” said his father; “the ground is not exactly even like a plank of wood. You see a pool of water against your feet. How or why is that made? Just because there is a hollow place here, and the water has filled it. That is the way in which ponds are made. All ponds are hollow places in the ground, filled by water; here you see again how water always runs *downwards*. It falls into the hollow place instead of creeping round to get past it, and thus makes a pond or tiny lake. There, a little higher up, where the stream is rather broad, it has washed a piece out of one of its banks, and rushed in to fill the place up, and so formed a *bay;* and at each corner of the bay the land points into the stream, and makes a *cape* or *headland*—one of them, indeed, might be called a *promontory.* That bay lies back from the stream, and would form a little harbour for your boat if you had brought it with you. By taking shelter in there it would avoid being carried down by the stream which runs past it."

"Oh, yes!" said George; "I see something has taken shelter there in the middle. What is it?"

"That, my boy," replied the father, "is not something which has taken shelter; it was there before the bay was made. It is a stone standing in the middle, and has some sand on the top. It seems as though it were peeping out of the water, and we may call it an *island.*"

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dis-turb' **light'-ning** **creep'-ing** **lev'-el**
pelt'-ed **tor'-rent** **roar'-ed** **hid'-ing**

Con'-flu-ence, the place where two or more rivers meet.

LESSON XV.

RECAPITULATION.

THE storms of the last few days had not cleared "the chambers of the sky," for the clouds were thick and dark, and a steady rain fell which seemed likely to last all day. "I think," said Mr. Goodman, "that we shall find pleasure in-doors by talking over what we have seen since we came here; for while we remember to learn, we should also learn to remember."

The boys were pleased with this plan, for they looked upon it almost as a form of telling pretty tales, and they were quite right.

"Now," said the father, "let me hear you tell of the sights we have seen, and the lessons learned from them! George shall be the first speaker."

Master George made his effort thus: "We arrived by train late in the day, and took lodgings in this cottage; and then went to take our first view of the sea—and a pretty sight it was. The waves were tossing about as far as our eyes could reach, and I remember that the sky and the water seemed to meet together a long way off. When I asked what there was beyond that place, you said, 'More sky and more water.'"

"Did I tell you," asked Mr. Goodman, "what name we gave to the line where the sky and the water seem to meet?"

The boys had not heard the name, which, said the father, was the "*Horizon.*" George then proceeded—

"Then the waves rolled up the land so far that it would have washed over us if we had not stepped farther back, and they broke on the sand; and for that reason you called them '*Breakers.*' Then the tide——"

"Stop, my boy," said Mr. Goodman. "You are telling the story very nicely indeed; but is there nothing to be said about the *height* of the waves before you speak of the tide?"

"Yes," replied the boy. "The waves *mounted* very high sometimes, and that is why they are often known as 'mountain waves,' looking almost like the very high hills called 'mountains' on the land. The water rising very high towards our feet, and going down very low, twice up and twice down every day, is called the rising and falling of the tide."

"*And when it is at its highest place,*" the father added, "*it is called 'High Tide,' and when at its lowest place it is known as 'Low Tide.'*"

George then spoke of the pretty ship which brought tea, and silk, and rice from China, all of which he described as 'goods' carried in the 'hollow' part of the vessel, but which Mr. Goodman explained more fully, saying, "*'Cargo' is the name for all the goods brought by the ship, and 'Hold' is the name of the hollow part that 'holds' it.*"

"Yes, father," said the boy, "I remember it now; and also that the small vessel in which sailors go to catch fish is called a '*Smack*,' which the old sailor told us when I was picking up a piece of sea-weed."

Mr. Goodman reminded his son that a *sea-weed* was a "*Sea-plant*," and, when asking what was the chief use of these plants which grew in some parts in such large quantities as to be almost like forests, was glad to hear George answer that it was "*to afford shelter and food for fishes and other animals that lived in the deep sea.*"

"How rough the sea was, father!" said George, "when we stood on that rock, and the wind was so strong as almost to blow us into the bay. You told us that the bay-window was so called because of its likeness to a notch in the bank, for it gives extra space to the room in the same way as an arch in the bank gives more room for the sea to spread. And you also told us that the bay looked like a piece bitten out of the edge of a straight bank by some monster."

Mr. Goodman praised the boy for describing a bay so well, and bade him always remember that *a "Bay" is a sheltered place or arch in the edge of the coast, enclosed by a bank all round except on that side which faces the sea or river.* "But," he added, "you must not mistake a long and narrow opening into the land for a bay, for *if it is both narrow and shallow, it is called a 'Creek'* (which means a *crack*), *and if it is wider and deep, it is a 'Gulf.'* "

Then George told how he and Fred raced round the back of the rock and down a path that led to the stony beach, where their feet sank among the pebbles; and how they stood under a rocky shelf, the lower part of which had been scooped out by the tide. That rock would fall some day, and perhaps break into pieces, which would be shaped into pebbles by the action of the waves.

"*The waves,*" Mr. Goodman said, "*will roll the pieces of rock one over the other until their* *sharp corners are ground off, and thus the rocky lumps will become smooth 'Pebbles;' and the small grains that are rubbed off will form 'Sand.'"*

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lodg'-ings **step'-ped** **quan'-ti-ties**

Hor'-iz-on, the line where sea and sky or land and sky seem to meet.

DICTATION EXERCISES.

I.

When we stand on the sea-shore and look over the water we see that the sky and water appear to meet. The line where the sky and the sea, or where the sky and the land, seem to meet, is called the horizon.

II.

The difference between a gulf and a bay is this:—The gulf runs a long way into the land, and has a narrow entrance; the bay does not run far into the land, and it is wider at the entrance than anywhere else, just like a bay-window.

III.

"Strait" means narrow. Any narrow passage of water, with open water at both ends, is a strait. The narrow entrance to a gulf or creek is a strait. The Straits of Dover join the English Channel with the North Sea.

LESSON XVI.

RECAPITULATION (*continued*).

In the afternoon Master Fred was allowed to tell the story, which he began by describing the voyage in a boat. He had not forgotten that a high *cliff* which seemed to frown like a giant on the sea below was called a *cape*, which in a foreign language means *head*. And he spoke of a high cliff standing on the edge of the water, appearing to sailors at a distance like a great beast lying down with its "head" towards the sea, so that the seamen had been led to call it a *head*.

"You remember," said Mr. Goodman, "that as these 'heads' are parts of the 'land,' they are also called *headlands*, and that they are usually the end or 'head' of a hill or mountain. *A 'Cape' is the 'head' of a hill, or a 'bend' of land—a part of the coast standing forward towards the sea.* It is also called a '*Promontory;*' and if it does not stand very high, it is known as a '*Point.*'"

Fred was about to have added that explanation. He asked if it were not correct that a low piece of shore poking a long way into the water was said by sailors, when far out at sea, to look like the 'nose' on a beast's head.

"Yes," replied his father; "*it is called a 'Ness,' which means 'nose.'* I think I told you that, a thousand years ago, many bold sailors used to come from lands over the sea to England, and that they gave to these long but low capes the name of '*Naze,*' by which they meant 'nose.' "

"There was another piece of land stretching into the sea, which was not called a 'ness,' because it was shaped like a spoon," Master Fred said. "It had a broad head, and was joined to the shore by a narrow strip of land like a neck; and the sea would have flowed all round the head but for that narrow neck."

"Can you remember its name?" asked Mr. Goodman.

"A *Peninsula,*" was the reply, "and the narrow part is called an *Isthmus.*"

"Very good," said the father; "*a 'Peninsula' is a head of land almost 'insulated'—that is, almost surrounded by water; an 'Isthmus' is the narrow neck which connects the head with the shore; and the place where the neck joins the shore, or main-land, is called the 'Base' of the Peninsula.*"

When near to that Peninsula, the boy remembered, he had asked the boatman where ships would go for shelter when in danger of being blown on to the rocks, in rough weather. And the answer was still fresh in Fred's memory, that they would seek some *Harbour* or *Haven*, which is a large bay, or perhaps an arm of the sea, into which the waves could not roll before their force was spent. Or, perhaps, they would ride at anchor in some narrow passage of water called *Roads* or *Roadsteads*, so called because they were places almost as safe as roads on land.

"Very good indeed," Mr. Goodman added; "no matter where it may be, *a 'Harbour'* or *'Haven' is a place of shelter.*"

One of the most pleasant days they had spent was that on which they rowed to the pretty island, which the boys had named 'Boat Island,' to mark the voyage they had made in the boat. Fred told not only of the birds and flowers they saw on the isle, but also of the voyage they made round it. "The edge," he said, "was not even all the way, for there were little bays, and capes, and nesses at different parts. And we found that although we rowed, as it seemed, straight along by the edge, we came at last to the place we started from, and so we knew that there was water all round it."

"And when we saw it from a distance, what did it remind us of?" asked the father.

"An eye of land peeping out of the sea," was Fred's reply.

"But what is it really?" Mr. Goodman asked next.

Fred answered that it was the top of a hill peeping above the level of the water, its base being down in the depths of the sea; and, he added, large ones are called "Islands," and small ones "Islets."

"Well done!" said the father; "*you will easily remember that an Island is land surrounded entirely by water*—set in the water as the eye is set in the face. Perhaps you can now tell me the name of a group of islands or islets?"

And his little son replied, "An '*Archipelago!*'"

Then the crossing from the island to the "*Main-land*" was described by the boy, who, remembering it by the name of a "*Strait,*" asked why it was so called. To this Mr. Goodman replied, "'Strait' is an old English word, meaning 'narrow;' *when we see a narrow passage of water we call it a* '*Strait,*' *and if it* *be shallow as well as narrow, it is termed a 'Sound.'"*

"When we reached the 'mainland,' you told us it was neither a ness, nor a peninsula, nor an isthmus, but the 'chief' land, from which all these stand forward," said Fred; "you once called it the 'coast,' and at another time the 'shore;' do they both mean the same thing?"

The father made this clear by saying, "The edge of the land, where it joins the water, is called the 'shore' when we speak of a precise place, but it is known as the coast when we refer to a greater length. Suppose we speak of the town of Brighton, we should say *the 'Shore' of Brighton;* but in talking of the long line stretching round a large part of England, we should say *the English 'Coast.'* When speaking of a *long* line of coast, we describe it as a *sandy coast*, a *rocky coast*, an *iron-bound coast*, as the nature of the land may be. Coasting vessels are vessels that keep near the shore; and a coasting trade is the trade carried on by such vessels from one port to another on the edge of the country."

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an'-chor **en-tire'-ly** **ex-plan-a'-tion**

In'-su-lat-ed, standing by itself. **Pre-cise',** exact.

LESSON XVII.

Recapitulation (*continued*).

It was George's turn to "continue" the story, and that word "continue" rose in his mind first when he tried to explain the nature of a *continent.* He knew that there were large islands as well as small ones, and that some very long stretches of land, although they had water all round, *contained* many countries; and he began by saying—

"We cannot go from Britain to another country without crossing the sea, because Britain is an island—it has water all round it; but in some parts of the world people can travel from one country to another without leaving the land, although they must reach the water at last. Where there are several countries touching one another, the land is called a *continent.*"

Mr. Goodman was pleased with this description, to which he added, "*A 'Continent' is a long unbroken piece of land in which many countries are 'contained,' or 'continued,' like links in a chain; it is the 'mainland' of a large part of the world.*"

And the linking of one country with another to make a continent reminded the boy of the high hills called mountains (which stood *ranged* in a row, touching one another, which also resembled a *chain*), for which reason they were named a mountain range, or mountain chain.

"But," asked the father, "why do we call them mountains?" And his son replied, "Because they rise so high that they seem to *mount* towards the sky. And many of them are so far above the level of the warm earth, in some parts of the world, that their tops are always covered with snow. Some of these *mountains* across the sea, you told us, are a thousand times as high as our house; and unless they are a hundred times as high as the house they would only be *hills*."

Mr. Goodman tried to make his sons understand that the mountains in a row were not all of the same height, for the top of the range was not even like a bank, but stood up in points like the teeth of a saw, though not quite so regularly. "*A 'Range,'*" *he said*, "*means a 'row'—the mountains touching one another are linked together, which reminds us of a 'chain,' and we describe them as a 'Range' or 'Chain;' the line above which the principal peaks rise is called the 'Crest' or 'Ridge;' and the hollow part used* *as a road along which people 'pass' across the range is a 'Pass.'*"

"And," George added, "the bottom part of a mountain is called its '*Foot*' or '*Base;*' the parts that stand out sideways are known as '*Ribs*' or '*Spurs;*' and the top of a mountain is called its '*Crown*' or '*Summit;*'" which was quite right.

The parent bade his sons remember that "'*Mountains*' are the *largest* eminences of a country, and '*Hills*' the smaller ones; that as well as being in ranges or chains, they also stand in '*Groups*' (not touching, although being very near to one another); but that they seldom stand alone, except in the form or nature of a '*Volcano,*' or *burning mountain*, the hole in which is called the '*Crater.*'"

"You have told us," said the father, "of the likeness between the waves and the mountain chains; but there are no rows of waves without hollow places or grooves between them. Is there nothing on land that these remind you of?"

"The hollow places," George replied, "are called Valleys. Some of them are broad and deep, others are narrow and perhaps shallow; but they are all valleys."

"Valleys or vales," Mr. Goodman explained, "are the natural opposites of mountains. A '*Valley*' is the trench or hollow through which a river flows. If it be wide or large we call it a *valley* or *vale;* small valleys are usually termed '*Dales;*' and very small ones are called '*Dells*,' meaning little dales. But narrow and deep slits in the hills or in rocks are known as '*Glens*.'"

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rang'-ed **op'-po-site** **reg-u-lar'-i-ty**
trench **touch'-ing** **grooves**

Prin'-ci-pal, chief.	**Em'-i-nence**, height.
Re-sem'-bled, looked like.	**Re-mind'**, brought back to the mind.

DICTATION EXERCISE.

The birth-place of a river is its "source;" the groove in which the water runs is the "channel;" the floor on which the river lies is the "bed;" the sides are the "banks;" the direction is the "course;" the speed at which the water travels is the "current," and the part where the river gives up its waters to the sea is the mouth.

LESSON XVIII.

RECAPITULATION (*continued*).

GEORGE then described the drive they had from the hills and through the wide plain, which was watered by a pretty river. He told, too, of the sight of the hills when viewed from the plain; of the uses of the hills in partly shielding the plain from the keen winds; of the rain trickling down the hills into hollow places, and making streams that washed sand and dirt away as the rain does in the streets; and how the streams at the bottom of the hills joined together and made a river, which ran down, down, down, till it reached the sea.

"Very good indeed," said Mr. Goodman. "You appear to well understand that *a 'Plain' is a district of more or less even ground, not broken up by mountains or hills.* Always bear in mind that *when a plain is high above the level of a sea it is known as a 'Plateau' or 'Tableland,' and that some large flat plains are called 'Steppes.'*"

The father added, "We should not forget that the bottom of the deep sea is not even and smooth all over. It has its broad plains, like those not covered by water; it has, too, its hills and dales, its broad valleys, and groups and chains of mountains. Some of the mountains stand so high as to be above the level of the water, forming islands, of which one is our island home."

George then traced the course of a river from its birthplace to its home in the sea. He told how the water which had been stored up in the earth gushed out of a hole, and was called a "*Spring*," because there it first "springs" into sight; also, how it trickled out of large patches of moss, and ran down the hills into hollow places or grooves, and thus made streams; how it filled large holes and made lakes; how several streams met together and formed a river; how all through its travels it always went down-hill, and never up-hill, until it reached the sea—the lowest place of all. He did not forget that the whole of the hollow part made by the sloping hills where all these streams ran down into one great river was called a "*Basin;*" that the groove in which the river flowed was the "*Valley;*" and that the clearing of the land of this water was known as "*Drainage.*" "The water-parting," he said, "*is the rim of the hills round the top of the basin, which parts the water into streams, that are sent* *in different directions and into different basins.* It is sometimes called the '*Watershed.*'"

Mr. Goodman took up the story in order to explain clearly the meanings of many of the things which his son had described. He said: "*The birthplace of the river is the* '*Source*' *from which the water is obtained; the groove in which it runs is the* '*Channel;*' *the floor on which the river lies is its* '*Bed;*' *and the sides are the* '*Banks*' *which prevent the water from flowing over. The road or direction in which it runs is called the* '*Course;*' *the speed at which it travels is the* '*Current;*' *and the wide opening where it gives up its waters is its* '*Mouth.*' Perhaps, now I have traced the whole length of a river, you can tell me what I have missed."

George remembered that *a* "*Torrent*" *is a stream that flows only in the winter months, and either becomes dry or nearly so in the summer;* very different from a "*River,*" which is always flowing, never dry. "Small streams," he said, "are sometimes called '*Rivulets*' or else '*Brooks.*' *The place at which some of them meet is called a* '*Confluence,*' that is a 'flowing together;' and *the streams that join the river at this confluence are called* '*Affluents,*' meaning 'flowing to,' because they 'flow to' it; they are also named '*Tributaries,*' because they pay *tribute*, or con*tribute* a share of the water that goes to make the large river."

"Have you," asked the father, "forgotten what is often seen at the mouth of a shallow river?"

"A heap of mud or sand, dropped by the river," replied George. "It is called a '*Delta*,' *because it is of the shape of a letter* Δ, having the same name in the Greek language."

"Very good," said the parent; "and *the point of the delta where the river first entered the sea is called the 'Head' of the delta.*"

After speaking of "*Glaciers*," *which are frozen rivers that slide down towards the sea;* and "*Icebergs*," *which mean "mountains of ice*," because when they break off the end of a glacier they float out to sea, and look like floating mountains; and also of "*Lagoons*," *which are lakes on land, but supplied with water through creeks reaching between them and the sea*, Mr. Goodman finished by saying—

"You have shown how rivers are made, but not how the rain is formed to feed the rivers. You remember that seas and lakes spread over a large space, and are warmed by the sun. Then the warm water sends up very fine steam, which is made into clouds; and the clouds, striking against the hills, break up into drops of rain, which fall to the ground, and go to feed the rivers that roll to the sea. What a grand plan we see in God's great system of waterworks!"

The next morning the boys and their father bade farewell to the cottage and the sea, and returned by railway train to their inland home. George and Fred talked of the sights they had seen, and longed to get back among their many little friends, to tell of the pleasure of going to the sea-side. As they passed across fields, through woods and valleys, and between hills, all things seemed to wear a new dress, and to have more meaning, now that the boys had learned so much of their uses.

They saw many streams running from the hills into the valleys. And on the bank of a large river a pretty town stood, where men were busy with their boats, which brought coals, and straw, and hay, and many other things for the use of the people who lived in the town. It was one of those scenes, Mr. Goodman said, that the poet spoke of when he wrote—

"Child, there's a valley over there,
Pretty and wooded and sly;
And a little brook that says—'Take care,
Or I'll drown you by-and-by.'

And what comes next? A little town,
And a towering hill again;
More hills and valleys, up and down,
And a river now and then."

sys'-tem	**shield'-ing**	**dif'-fer-ent**
view'-ed	**tow'-er-ing**	**di-rec'-tions**
broad	**plea'-sure**	**brought**

La-goon', a salt lake on the coast, fed by the tide.
Steppes, large, high plains; a name used principally in Asia.

DICTATION EXERCISES.

I.

"Mountains are very grand to look at; they are so great and strong that they make us feel how little we are, and how mighty their Maker must be. The land in which the Bible was mostly written is a very mountainous country; and hence you find a great deal said about mountains in that Book."

II.

"Plains have a beauty of their own. They make us to feel what a deal of room there is in the world for all of us. They enable us to see more things at once than we can in a mountain land, unless we take the trouble to climb to the summits."

PART II.

AT HOME.

LESSON XIX.

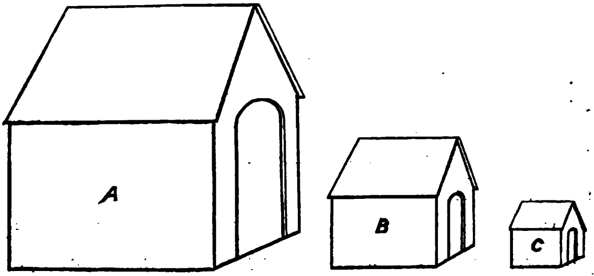
MAPS.

WHEN the holidays were over, George and his little brother began new lessons with their father, in the large room which they called the schoolroom.

"I want you," said Mr. Goodman, "to know something about *proportion*. That is a long word, but you will soon learn what it means. I will draw three little pictures of a dog's-kennel.

"Although these are of different sizes, they are each the likeness of the same kennel. The one marked A is larger than the one marked B, and that marked B is larger than the one marked C. None of them is so large as a real kennel; but while the whole of A is larger than B, the roof of the one is just as much larger than the roof of the other, and the opening at the front of the one marked A is as much larger than that in B. Just as one 'portion' is large or small, so is every other 'portion;' and that is what is meant by *pro*portion. 'Pro' is a Latin word meaning 'for,' and *pro*-portion means 'portion for portion,' 'part for part.'

"Now," the father continued, "look on the wall of this room. Let us see if we can draw a picture of it! We shall do well to measure it first: you have a tape-measure, George."



The boy took out of his pocket the long piece of tape with marks on it, and he and little Fred stretched it across the wall from one corner of the room to the opposite; and George said that the wall was just thirty *feet* long.

"Good!" said the father. "Now, George, mount these steps, and hold one end of the tape at the top of the wall against the ceiling, and let it hang down so that Fred can see where it touches the floor."

They found that the wall was just fifteen feet high, or half as high as it was long.

"If we had a sheet of paper," said Mr. Goodman, "just as large as the wall, we could measure the fire-place and the door, and the maps that hang up, and make a picture on that sheet of paper to look almost like the wall as it stands before us."

"But we have not got such a large sheet, father," said George.

"No," said the parent. "But suppose we had a sheet just half that size, how should we draw a picture that would seem like the wall, with its fire-place, and door, and maps?"

"Perhaps draw everything half the size that they measure," replied Master George.

"Very good," said Mr. Goodman. "And if the paper were only a quarter of the size of the wall, what then?"

"Make all the things a quarter of the size they measure," was little Fred's answer.

"Well done, Fred!" said the parent. "Now, you have inches as well as feet marked on the tape. The inches are smaller than the feet; are they not?"

"Yes," replied George; "there are twelve inches marked on each foot."

"Very well!" said the father; "if we pretend that an inch is a foot, how long must we draw the picture of the wall on the paper?"

The boys knew at once that the picture must be thirty inches long, because the wall was thirty feet long; and then each inch would stand for a foot in length, although it was really much smaller.

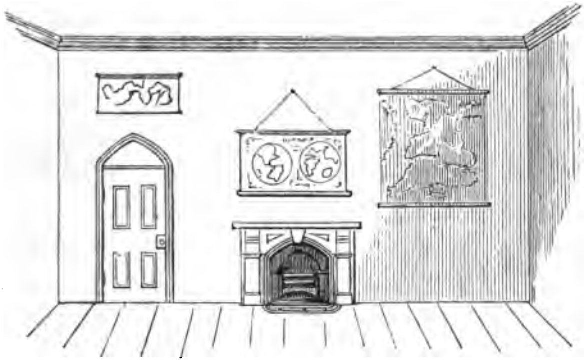
"And, as the wall is fifteen feet high, how many inches must we make it on the picture?" asked Mr. Goodman.

"Fifteen inches," replied George, for he knew that if an inch was to stand for a foot in length, it must also stand for a foot in height; then thirty inches would mean thirty feet, and fifteen inches would mean fifteen feet.

"Now, measure from the left corner to the door," said the father; and when George had done so, and found it to be four feet, they took four inches to show it in the picture. The boys then drew the tape across the door itself, and found it to be three feet and a half wide, so they made it three inches and a half on the paper; for three inches were like three feet, and half an inch meant half a foot.

"Now, what is the height of the door?" asked Mr. Goodman; and George again went up the steps, and the boys said that the door was just seven feet high.

"That," said little Fred, "must be drawn seven inches on the paper."



Then they measured the fire-place and the maps, and made just an inch on the picture for each foot of the wall, and thus they got a really good picture of the wall and all that belonged to it.

It would not do to *measure* the door, and *guess* the size of the *fire-place*, nor to measure any one thing and guess at any other one, or some things might be made too large or too small. They must all be drawn in *proportion* to their size. If the fire-place had been drawn high, and the door low, they would not be in *pro-portion*, because one "portion" of the picture would have been too large, and another "portion" too small. When one thing is twice as great as another, it must be drawn twice the size on the paper; then the "portions" of the wall which are larger than other "portions" will appear the right size on the picture.

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learn
ceil′-ing
ken′-nel
half
meas′-ure
pic′-ture
door
fif′-teen
por′-tion
meant
pro-por′-tion
stretch′-ed

Pre-tend′, to make believe something is real or true, when it is not real or true.

Dictation Exercise.

A plan is a picture drawn to scale, showing the size and position of things as seen from above. All the things drawn in the plan must be in proportion. When one thing is half as broad or half as long as another, it must be drawn half as broad or half as long on the plan.

LESSON XX.

MAPS (*continued*).

"Now," said Mr. Goodman, as he and his boys stood in the school-room, "the wall stands upright; and if we set the picture upright too it will show us what the wall is like. Suppose I draw a picture of the floor, to show where the table and the chairs stand; would it be proper to set the picture upright then?"

George thought it would be better to lay it down flat, in the same position as the floor. The boys then stretched the tape-measure along the floor, and found it to be thirty feet long, and just fifteen wide, the same as the wall; but that is not the case in all rooms. And the father asked how large the boys would make the picture of the floor, to which they replied, "The same as the one for the wall."

"That need not be," said Mr. Goodman; "for as we cannot make it so large as the floor really is, it does not matter what size the picture is. Suppose we pretend that half an inch, instead of an inch, is a foot; then how large will it be?"

"Just half the size of the other one," said George.

"Very good," Mr. Goodman remarked. "Now, how long shall we make the plan of the floor?"

The boys agreed that it must be fifteen inches, which would be the same length as thirty half-inches; and the width, they said, should be fifteen half-inches or seven inches and a half. Then they drew lines of those lengths, and thus made the shape of the floor.

"You had better take the steps out of the room," the father said, "so that we may have nothing but the table and the six chairs."

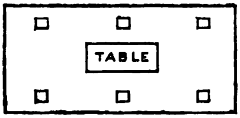
Then Mr. Goodman asked how they were to look down on to the floor and the table without seeing the legs of the table and chairs, for they must look downward to face the floor just as they had stood upright to face the wall.

George thought they ought to be on the ceiling, but, of course, they could not lie there; and little Fred could not say what should be done.

At last, the father said they must fancy they were on the ceiling, just as if they were flies crawling about there; for a fly could look down and see the floor, and the top of the table, and the seats of the chairs, all at once.

Then, as the shape of the floor had been drawn, they had to measure the top of the table, and the distance from it to the walls, and also from the walls to the chairs. And for every foot of measure they counted just half an inch on the paper, which gave them a picture or plan half the size of the one they had made of the wall.

"Now," said Mr. Goodman, "this is a *plan* or *map* of the room. Do you think you could draw a plan of the front garden?"



"I think so," replied George.

"How will you proceed?" asked the father, "for the garden is very much larger than this room, and yet we cannot have a sheet of paper larger than the one we have used."

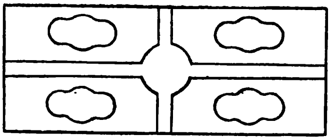
George thought that as they would use the same size of paper, they might make half an inch to stand for more than a foot.

"Or," said his father, "we might make even a quarter of an inch to mean more than a foot."

They found the garden to be three times as long as the school-room; that is, it was just thirty *yards* long, and not simply thirty *feet.*

"Do you know what a yard is?" asked the father. To which question his elder son replied that it was just three feet. What was to be done then? The father told them to count a quarter of an inch on the paper as meaning a yard in the garden, and then asked how long the picture would measure.

"Thirty quarter-inches," replied George, "which is the same as fifteen half-inches."



PLAN OF GARDEN.

Then they measured the *width* of the garden; and for every yard (or three feet) they took a quarter of an inch on the paper. And just as they had done with the door and the fireplace, when making a picture of the wall, so they did with the beds and paths of the garden. Although the garden was three times as large as the room, the plan of the garden was only half the size of that of the room. Can you tell why? No doubt you can. You will say that they took only thirty quarter-inches to mean thirty *yards* of garden, while they made thirty half-inches to mean thirty *feet* of wall.

"Now, my boys," said Mr. Goodman, "you know that it does not matter how much ground you pretend to put in one inch. You may make an inch to mean a yard, or a hundred yards, or a mile, or just what you think proper. Only, it must be the same all over the plan or map. You must not make an inch to stand for a yard in the length, and perhaps half a mile in the width, of the plan; whatever you pretend in one direction, you must observe in the other; in other words, everything must be drawn in proportion."

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floor
pro-ceed′
thir′-ty
doubt
crawl′-ing
quar′-ter
once
sup-pose′
ob-serve′
width
drawn
see′-ing

DICTATION EXERCISE.

A plan may be drawn to any scale; that is, we may take an inch to mean a foot, or a yard, or anything else we please. A plan drawn to a large scale shows the smaller objects, whilst one drawn to a small scale shows only the larger objects.

LESSON XXI.

Maps (*continued*).

George and Fred spent Saturday in drawing a map of the village green, together with the church, the school, and some of the houses facing the green. The map was to show only the places where these things stood, and was not to be a picture of them.

The boys first measured the ground, to find out its exact size, which was about three hundred yards long, and three hundred yards wide. They then agreed as to the *scale* on which the map should be drawn. A scale means the proportion of the size of the map to that which has to be represented. When they made a plan of the school-room the scale was half an inch to the foot; that is, half an inch on the paper stood for a foot on the floor of the room. But when they made a plan of the garden, the scale was only a quarter of an inch to the yard, which means that a quarter of an inch on the paper stood for a yard, or three feet, of the ground.

Now a scale had to be fixed for a map of the village; and the boys agreed that it should be an inch to a hundred yards; that is, that all the things that stood within a measure of a hundred yards in the village must be drawn within the space of an inch on the paper. And this is how they went to work:—

As the village was three hundred yards long, the map was drawn three inches in length; and as the width was the same as the length, the map was made as broad as it was long: the map was then square. Thus they had drawn the outline, which means the line outside the village.

George said, "Now we must draw the road down the middle, from one end to the other, like the one that runs through the village." This was easily done.

Fred had a piece of string fifty yards long, and this was stretched from the top end of the village, along the road. Having put a stone where the cord finished, the boys stretched the string a further distance of fifty yards, and thus they measured a hundred yards, which brought them to a road leading out of the side of the highway to the right-hand corner (or north-east corner) of the village.

"There," said George, "a hundred yards of road means the same as an inch of paper on our scale. So that an inch from the farther end of the map is the place where this side road must start from; and as it goes to the right-hand corner of the village, we must draw it to the same corner of the map."

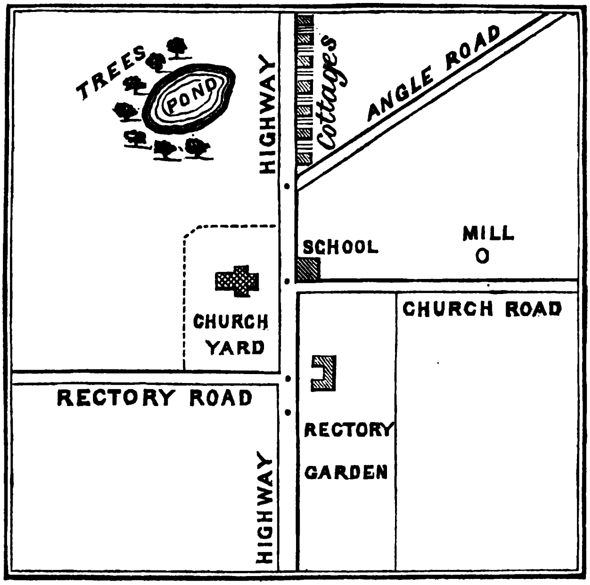
Fifty yards farther along the highway, a straight road branched on the same side, and reached across the fields.

"Fifty yards," said Fred, "means half an inch on the paper, for it is half a hundred yards, which means an inch."

A hundred yards down that side road stood a windmill, which was marked at a distance of one inch from the highway on the map. Again the boys went to the highway, and found, fifty yards farther along, that a straight road branched out on the opposite side; and so they marked it on the map half an inch farther off, and turning the opposite way. Thus, they had drawn all the roads in the village.

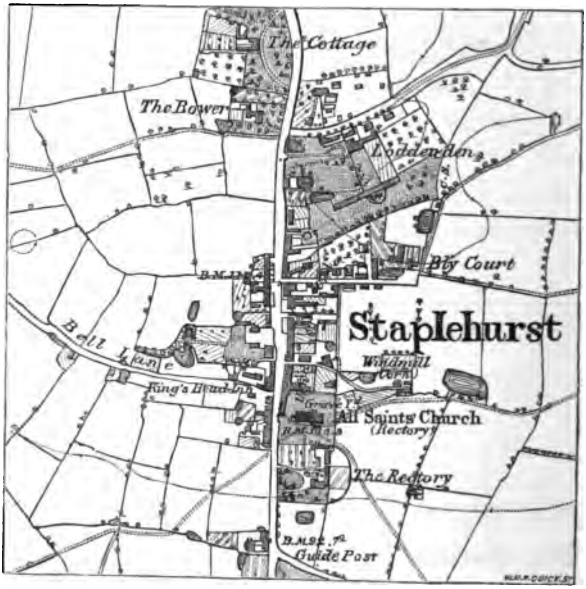
"Now," said George, "there is but little to be done. The Rectory is opposite Rectory Road, the Church faces Church Road, the school is at the corner of Church Road, and farther on there are cottages from the corner of Angle Road along the side of the highway to the end of the village; and the duck-pond on the green, backed by a few trees, is just opposite the middle cottage. The Rectory garden fronts Rectory Road for a distance of more than a hundred yards, which is like a little more than an inch on the map, and reaches to the end of the village."

These were easily put in their proper places after the roads had been drawn to measure; and this is the map, as they showed it to their father in the evening:—



Mr. Goodman, after praising the efforts of his boys, proposed to make a map the scale of which should be six inches to a mile, and, on asking how much space of ground could be shown on a paper three inches square, was answered by George, "Half a mile."

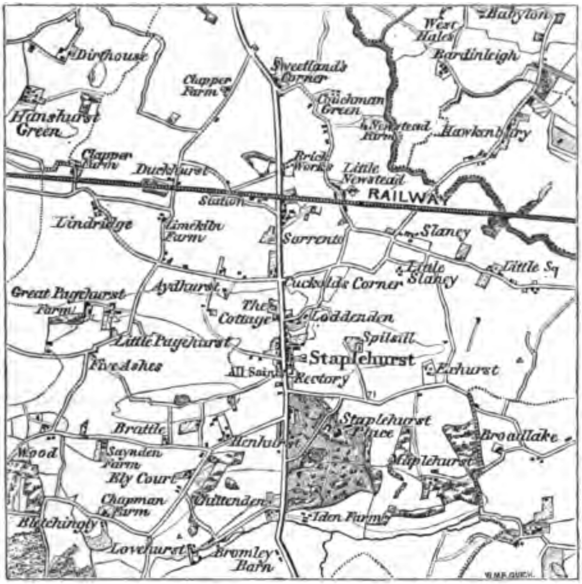
"Very good," said the father. "Now here is a map of a village called Staplehurst, in Kent. It is drawn to the scale of six inches to a mile. You will see that we have crowded into this map, which measures only three inches in the side, the whole of the village, and a large number of fields, &c.:—



"Now," Mr. Goodman asked, "if we draw

to the scale of one inch to the mile, how much space of ground can we crowd into your paper of three inches square?"

"Three miles square," replied Fred, "for there would, on a scale of an inch to the mile, be as many miles of ground as there are inches of paper."



On this scale the village would measure only half an inch square instead of three inches, and so a great deal of room would be left for other places to be marked on the map. But, as the scale was very much smaller, all the villages and farms had to be drawn much smaller too. On page 117 there is a copy of the map, which shows the places that stood within a space of three miles square.

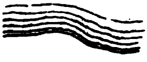
"You see now," Mr. Goodman said, "that we may draw to any scale we choose. We may pretend that an inch means a hundred miles, or a thousand miles, or any other amount of space. When we show a small space—say a village—on the map, it is easy to show where the streets, the houses, and the gardens stand; but if we show a whole country in the same space, only the mountains and large lakes and some of the rivers and towns can be marked."

People who go up in a balloon can see houses and streets at first; but as they rise higher, and look over a wider space, they see only large things, such as mountains and rivers and towns. The mountains appear very small, the largest rivers are only like streaks, and towns seem like dots or patches.

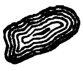
As the earth appears to them, so is a map of a large district. Things that appear largest, such as mountain chains, are drawn largest; towns appear small, and are marked by little rings; broad rivers are marked with a thick line, and narrow ones with a thin stroke; the broadest end (the mouth) of the river is drawn thicker than the narrow end (the source), but we cannot mark a river so lightly as it appears in proportion to the size of mountains or towns, for the lines would be too thin to be seen.

"On a map," said Mr. Goodman, "the tops of mountains and of mountain ranges are left white, and their sloping sides are shaded, and the steeper the sides the darker is the shading; so that very dark lines show the mountains to be very high and steep, and fainter marks mean that they are not so high or steep. And lakes and seas are marked with wavy lines, like the waves of the sea, or the ripples on water made by the wind. Large towns are usually marked with rings, and small towns with dots. Rivers have lines thin at the source, and thicker and thicker as the rivers widen, till they reach the mouth."

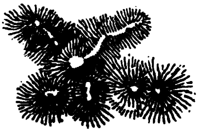
Here the father made drawings to show his meaning:—



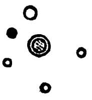
SEA.



LAKE.



MOUNTAIN CHAINS.



TOWNS.

The boys then spent some time in tracing these marks on a map of the country, and so learned the positions of mountains and rivers, lakes and towns, in their island home.

⁂ A map should now be shown, and the rivers, mountains, &c., pointed out.

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square
streaks
prais'-ing
slop'-ing
dis'-trict
ex'-act'
an'-gle
eas'-i-ly
fac'-ing
high'-way
pos-i'-tion
learn'-ed

Scale (in map-drawing), the number of yards or miles represented by an inch.

Vil'-lage, a collection or group of houses more scattered than in a town or city.

Dictation Exercises.

I.

A map is a plan, or picture, drawn to scale, of a large surface of ground, as a city, or county, or country. In a map of a country the rivers, roads, and railways are marked by different kinds of lines, towns and villages by dots, and mountains by shading.

II.

We may draw a map to any scale we please. When we wish to show a small space of country, the map is drawn to a large scale, and when we wish to show a large piece of country, the map is drawn to a small scale. In the latter, only the larger mountains and rivers and towns are shown.

LESSON XXII.

Points of the Compass.

It was just noon, and the sun was shining brightly. Mr. Goodman and his two sons were in the school-room.

"Now, George," said the father, "look towards the sun. The *direction* in which you are looking is called the *south.* The sun is always exactly in the south at twelve o'clock. Now turn your back to the sun. There; now you are facing the north. The north, you see, is exactly opposite to the south. Now, while you face the north, stretch out your arms. Your right hand points towards the *east*, and your left hand points towards the *west.* The sun rises in the east, and sets in the west. East, west, north, and south are called the *cardinal* or chief points of the *compass.*

"Do you know what a compass is?" asked Mr. Goodman.

The boys had never seen a compass, and so the father took from his pocket a little round box with a glass face and a card inside, that looked somewhat like the face of a watch, except that instead of figures to show the hours it had points marked on the card, termed the "*Points of the Compass.*" Fixed on a pivot in the centre was a needle almost like the hand of a clock.

"You see," said the father, laying the box on the table, "that the sharp point of the needle stands towards the north; and, strange to say, you may turn the box any way you choose, still the needle will keep its place and point to the north."

The boys then twisted the box half-way round, and were amused and puzzled because the needle, which at first shook about as though it were uneasy, at last stood still and pointed to the north.

"There," said Mr. Goodman, "you have a very useful toy. Carry it about with you, and take it out of your pocket sometimes. Whenever you lay it down flat, you will be able to find the north by the direction of the needle's point, and from this the other *cardinal* points.

"In a thick fog we cannot tell where the sun is, even in the daytime; and if we were set down in a large field, and told to walk straight on towards the north, we should be as clumsy as though we were playing at blind man's buff. This would be awkward enough on land; but how much worse is it for sailors with their vessels on the sea, where there are no houses nor trees to remember the place by, nor anything but water and fog to be seen! Even without fog the weather is often very cloudy, so that sailors cannot tell the direction in which they are going, but for the compass which enables them to find north, south, east, and west. Before the mariner's compass was known, many hundreds of years ago, men were afraid to take their ships out of sight of land. Now that they know that the needle always points to the north, they can tell in the darkest night and thickest fog the direction in which they are sailing."

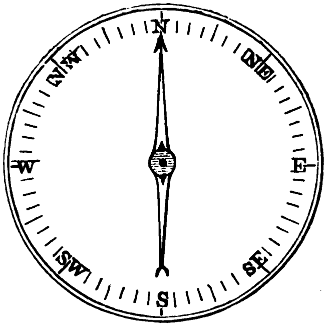
George, on being asked how when he had found the north, he would be able to tell which was the south, replied that it would be in the opposite direction, and when he looked towards the needle's point, the east would be on his right, and the west on his left.

"Now you have learned the four *cardinal* points, north, east, south, and west," said the father, "I will teach you four other points."

[Here he made a drawing of a compass with *eight* points marked on it.]

The boys soon learned that the point half-way between north and east was called *north-east*, the one between south and east *south-east*, that which stood between south and west *south-west*, and the one between north and west *north-west*.

"In making maps," Mr. Goodman explained, "it is usual to follow one plan. If one person took one side to stand for the north, and another person a different side, we should soon be confused. So it is agreed that in making a map we should suppose that the north is farthest from us, and the south nearest to us; then the east is on our right, and the west on our left."



ELEMENTARY COMPASS.

George and Fred easily understood that

unless some such plan were agreed upon, some people might be using the map upside down, and perhaps talk about the lands towards the cold north in mistake for those in the sunny south. Mr. Goodman said—

"You have seen that a map ought properly to be laid flat on the table, so as to be in the same position as the surface of the earth seems to be. But sometimes we want the map to be seen by several people at once. In schools a whole class have to look at it at the same time, which they could not do if it were laid on the table. For that reason we hang it on the wall where all may see it, and then fancy it to be flat. We soon learn to read it while it is upright, and picture to ourselves the top as being farthest from us, which is the north, and the bottom as being closer to us, which is the south."

[Here a large map was fixed on the wall.]

"The top of the map being the north," the father said, "is marked N. What does that mean?"

"N. stands for north," replied Fred.

"And the bottom of the map," added Mr. Goodman, "is marked S., the right side E., and the left W. Can you tell me the meaning of these?"

George answered, "S. means south, E. stands for east, and W. means west."

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cen'-tre
com'-pass
twist'-ed
ves'-sels
awk'-ward
farth'-est
un-eas'-y
re-mem'-ber

Di-rec'-tion, line.
Con-fus'-ed, put out of proper order.
Piv'-ot, a point on which something turns.
Car'-din-al, chief or principal.

Dictation Exercises.

I.

It is twelve o'clock. Turn your face to the south. You see the sun high up in the sky. The north is opposite to the south. Looking towards the north, the east is on your right hand, and the west on your left. East, west, north, and south are the four cardinal points of the compass.

II.

Lay a map on the table. Take your stand on the side of the map where you can read all the names. That part of the map which is farthest from you is the north, and that nearest you is the south. The part to your right hand is the east, and to your left hand the west. When the map is hung on the wall the north will be at the top, and the south at the bottom.

LESSON XXIII.

A Day on the Home Lake.—A Chart.

It was a bright morning in June, when George, with his mother and his two sisters, Emma and Mary, started by an early train to spend the day in a lovely park about ten miles distant. In this park there was a large and beautiful lake, and Mr. Goodman had leave from the owner for himself and family to row over it.

They found the boat named the *Dart* ready for their use. Mrs. Goodman and her daughters took their places, and George became captain and boatman too.

"I will make a map* of this lake," said George, "and write a history of the voyage. What shall we call the place we sail from?"

"Names are mostly given from some important event," said Mary. "We might call this *Start Point*, as the bank points sharply forward just at the place we start from. Then it will be put down in your map and history, for your friends to read, "Start Point, so called from the *Dart* having started hence on a voyage on the Home Lake, in the year one thousand eight hundred and seventy-nine."

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* Sometimes called a chart.

They sailed due north along a coast covered with small bushes, and named it *Bushy Bank;* and seeing a long piece of land stretching into the water they turned the boat away from it towards the east, and passed the end of the long strip, which Emma said looked like a giant's nose. "Ah," said George, "that is the sort of place father said was called a '*Ness*,' which is an old word for *Nose.* Suppose we call it Cape *Ness*, as it is a ness or nose poking into the lake."

A little farther north, almost north-east, the boat came to a narrow "*Gulf*," which is just the reverse of a ness, for it is a nose of water instead of land. "I have a good name for this spot," said Mrs. Goodman. "Let us call it *Duck Gulf*, in memory of the ducks which are fussing about there, and looking as happy as possible." Duck Gulf was set down on George's paper, and away the boat darted in a south-east direction to the point of a "*Peninsula.*" Here the captain threw out the anchor and fastened the boat, and the party stepped ashore at the place they afterwards knew as *Anchor Peak.* They wandered about the peninsula, and picked some pretty wild flowers that grew on the banks. They walked nearly the whole length, to the very narrow neck or isthmus which joined the main-land.

Here George thought of the lesson he had learned from his father about east and west being in opposite directions. Looking northward, he stretched out his right arm towards the east, and called the little bay to his right the *East Bay;* then he stretched his left hand towards the west, and called the little bay on the other side the *West Bay.* Some distance beyond the East Bay a large number of little mud-heaps peeped out of the water, which was very shallow, forming a shoal too shallow for the boat to pass.

The young girls, each with a bunch of flowers, returned to the boat, followed by George and their mother; and when all were quietly seated, the captain rowed eastward nearly to the edge of the lake, where the bank, being muddy, was named by Emma the *Mud-bank;* and it was noted in the book as Mudbank, a muddy slope on the east margin of the Home Lake. "Look," exclaimed Mary, "there is an old boat partly sunk in that narrow creek; it looks like a big tub."

"Yes," said Emma, "and it has a name on the stern, which shows that it was called the

Lark. We might call this *Lark Creek*, and then it will be put down in George's book and on the map for his friends to study—'Lark Creek,' so called from the fearful wreck of the vessel called the *Lark*, which occurred just within the mouth of the creek in the year one thousand eight hundred and seventy-nine."

The whole party laughed heartily at this piece of fun, but they agreed, for all that, to adopt Emma's proposal. Then the *Dart* made a short course to the north-west, passing a point of land which had no special interest, and came to the mouth of the river that ran many miles from some distant hills to empty itself into the lake. "This stream," said Mrs. Goodman, "ought to be named the *River Buttercup*, because the first time we looked on its banks we found them bright and golden with buttercups." This was agreed upon, and the record was made: "The River Buttercup rises among some pretty hills, runs south-west through a region adorned with buttercups and daisies, and empties itself into Home Lake at the north-east corner of the lake."

"Suppose we set the compass, George, before we go home." That was Emma's idea, which was approved by all the party, and they found the needle pointed straight towards the main-land, which of course was the north. Then sailing to the left, straight along by the edge of the bank, they went due west for a long distance, and named the shore the *North Reach*, for it was the *north* bank, which *reached* a long way, until a portion of rising ground led up to a high bank, which, as well as being high, stood forward into the water.

"Reach Head," thought one of the girls, would be the proper name for this head-land. The bank was steep, and its top was graced by a few trees, with bushes growing here and there down to the water's edge. "I must go up on the cliff," said the captain, "and have a good look at the country. We ought to call this 'Cape Look-out.'"

"There is just as much reason to call it 'Cape Get Out,'" said Mary.

George climbed up the cliff, and saw the whole of the lake, from one end to the other—the peninsula, the creek, the river, and the scene for many miles beyond. He then returned to assist his mother and sisters, and in a few minutes they were all at the head of the cliff, and were about to sit in the shade made by the spreading branches of the trees, when the ladies were startled at the sight of a man who was sleeping there.

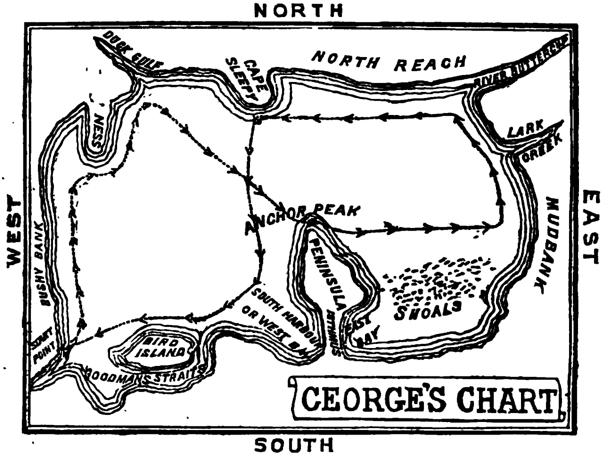
Emma was amused as well as surprised, and she made a drawing of the scene on a piece of paper. "What shall we name this place?" asked George. "Call it *Cape Sleepy*," was Mrs. Goodman's reply.

The captain wrote a description, to test how it would sound, and read it aloud: "Cape Sleepy, a bluff headland at the western end of North Reach, on the northern bank of the Home Lake, was discovered by Captain Goodman and his crew, who sailed in the *Dart* from Start Point in the latter part of the nineteenth century. It is well wooded, somewhat bleak, and commands a view of the whole lake, together with a wide stretch of country dotted with farms and woodlands. The name was given in memory of a lazy farmer having been found by the explorers sleeping at the foot of a tree while his plough and horses stood idle at a distance."

They all agreed that this would form a chapter of deep interest. They now descended the slope to the water's edge, where they once more embarked in their little vessel, sighting Duck Gulf at the north-west corner of the lake, and proceeded southward till they came to West Bay, which they had formerly so named from its being west of the isthmus.

Emma thought they should change this name to that of *South Harbour*, as it was at the southern side of the lake, and formed a good shelter or harbour for vessels; and this was approved by them all. At a short distance westward, a pretty island came in view, which Mary thought would make a fine picture. The young lady was put ashore, and she sat on the bank at the foot of a tree, where she made a rough sketch of the scene, and she finished the drawing when she got home.

They then sailed westward past the island, which was separated from the main-land by a channel too shallow for the *Dart* to float in. Emma thought the channel should be called *Goodman's Straits.* The island was covered with trees and bushes, among which many birds were making the air lively with their music. Mrs. Goodman, who was exceedingly fond of the feathered tribe, named the spot *Bird Island;* and as they passed it, George promised himself another visit.



Having finished their voyage, they wended their way to the railway station, and got home in good time—tired, but much pleased with the day spent on the Home Lake.

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cap′-tain
his′-to-ry
grac′-ed
climb′-ed
mem′-o-ry
east′-ward
fin′-ish-ed
min′-utes
pro-pos′-ed
a-dorn′-ed
ap-prov′-ed
isth′-mus
de-scend′-ed
prom′-is-ed
sep′-a-rate
sketch

Due North, exactly north.
Re′-verse, opposite.
Mar′-gin, edge.
Re′-gion, a particular part of a country.
Oc-cur′-red, took place, happened.
Em-bark′-ed, went on board the boat.

Dictation Exercises.

I.

"*How sharp and clear was the coast-line that divided the water from the land! The long peninsulas which ran out into the sea appeared like arms, and the capes and headlands stood here and there like fingers beckoning the waves to come on: and the gulfs and bays were clasping hands with the capes and peninsulas, as though vowing eternal friendship.*"

II.

"*Here, on the mainland, there were not so many signs of merriment; but all was beauty, peace, and love. I could see little rills shyly peeping here and there amongst the mountain dells; then they joined hands like loving children, and raced down the valleys in broader streams.*"

LESSON XXIV.

SHAPE OF THE EARTH.

THE next morning after the voyage round the lake, Mr. Goodman and his two sons were in the school-room at an early hour. "Looking over my library yesterday," said the father, "I found a book called 'A Voyage Round the World,' which led me to compare it with your voyage round the lake. You have heard, no doubt, that the world is *round*—not flat, as it seems to us, but round and solid like a ball. It is, therefore, called a *Sphere* or *Globe*.

"I will try to make this clear," added Mr. Goodman, "if Fred will allow us the use of his large india-rubber air-ball for a few minutes."

Master Fred lost no time in placing the ball on the table. It had not been on the table a minute before a blue-bottle fly settled on the ball, and moved about as though he were out on a journey of pleasure.

"See," said Mr. Goodman, "there is a fly creeping on the ball, and marching forward as straight as it can; if it keeps on the path it has chosen it will come to the same place again."

"I wonder," said Master. Fred, "if the fly knows that the ball is round?"

"Perhaps not," replied the father; "but whether it knows the shape of the ball or not, we are quite sure that it cannot see all over the globe at once. It has wonderful eyes, but still it is not able to see over the curve, and to know what is on the other side of the ball; it must go round to find that out. He can see so little of the ball at once, that if there were another fly a few inches from this one they could not see one another, because neither of them could see far over a curve.

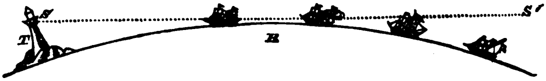
"Now, we are just like flies, only very much smaller in proportion to the size on the surface of the great globe called the Earth.

On the largest plain, or even on the wide ocean, we cannot see very far, because both land and water are bent round like the surface of the ball. Just as two flies, a few inches apart on the football, are unable to see each other, so we, who are larger, and placed on a much greater globe, cannot see people who are a few miles away, even on the sea, where there are no houses, nor trees, nor hills to stand in the way. It is not that our eyes are weak, but because they are not made to see round a corner or over a curve.

"Just fancy a ship sailing in one direction only—say always going eastward—it would at last come to the place from which it started. We know that it cannot sail exactly in a straight line all round the world, because some portions of land lie in the path; but when a ship does sail as straight as possible, and turns round any piece of land that lies in the way, and then gets into the straight line again, it comes to the place it started from, just as a pencil or a fly would in going round a ball. This is one proof that the earth is round like a ball or an orange."

To make plainer still that the earth is round—even where there is only water to be seen, Mr. Goodman placed the point of his pencil on the right side of the large ball, with the other end standing the opposite way. Then he told the eldest boy to look in a straight line over the top of the ball, while he traced the pencil upwards; and the first thing George saw was the broad end of the pencil, while the point which touched the ball was still out of sight, for he could not see over the curve.

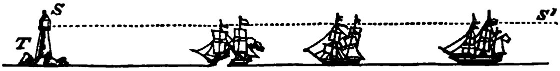
"Now that is just the mode in which ships' masts are seen gradually on a clear day at sea," said the father; "first the tip, then the top-mast, then the whole. I will show you this on the board." Here he drew the picture.



"T is a tower on which a man is standing to watch for vessels coming; S S′ is the man's line of sight. This line of sight is quite straight, for we can see only in a straight line, never round a corner or curve, as you found out when looking over the top of the ball to see the pencil. That letter H is at the farthest spot that can be seen on the globe, because the man cannot look over the shoulder of the world. It is there that the sky and earth seem to meet; and that is the *horizon*, of which I spoke to you when we spent the day in the cottage. But if anything rises above that dotted line S S′, then he will be able to see it, because it is in his line of sight—above the shoulder of the world."

The boys now saw clearly another proof that the world is round; for the way in which the top of a mast comes into view before that part of the ship which touches the sea, is just the same as that of the top of the pencil being seen before the point comes into sight. This shows how the world is round like a football.

"Now," said Mr. Goodman, "suppose the world were flat, as it seems to be; then a ship at sea would be seen like this"—



"The line of sight S S′ would never be stopped by the surface of the sea; and no matter how far a ship might be away, a man on the tower would see the whole of it, just as though it were close to him. It might, at a very long distance, look like a mere dot, but even then he could see the whole of it with a telescope."

George asked why, if the earth were round, things did not fall off.

"You will understand the reason better when you are older," said Mr. Goodman. "I can only tell you now, that the earth draws or attracts everything towards itself. Whereever we are on the earth's surface, *up* means away from the earth, and *down* towards the earth.

"In whatever part of the world we may be, our weight always presses against the ground; and in whatever direction our weight presses, that direction we call downwards. That is the reason why, on whatever part of the world we are, our feet are downwards, and our head is up. Thus, although our *antipodes* have their feet against our feet, their heads are not hanging downwards at all. They feel themselves just as upright as we do."

"Is it far round the earth?" asked George.

"Yes," replied his father; "nearly twenty-five thousand miles. If there were no sea to stop you, and you walked ten hours a day, and four miles an hour, it would take nearly two years to go the whole journey."

curve
earth
sur'-face
o'-range
pen'-cil
seas'-on
jour'-ney
yes'-ter-day

Li'-bra-ry, a room for books.
Grad-u'-al-ly, a little at a time.
Te'-le-scope, an instrument for helping to see things afar off.
At'-tracts, draws.
An-ti'-pod-es, people who live on the other side of the globe, and so have their feet opposite to our feet.

Dictation Exercises.

I.

"*We know in several ways that the earth is round. When ships sail continuously towards the west, they come back to us from the east. Or if they sail continuously towards the east, they come back to us from the west; and this could only happen on the surface of a round body.*"

II.

"*When a ship is a long way off at sea, the mast is seen before the hull. But if the mast is not too far off to be seen, neither is the hull. Therefore there must be something between us and the hull to prevent our seeing it; and there can be nothing but the curve of the earth's surface.*"

LESSON XXV.

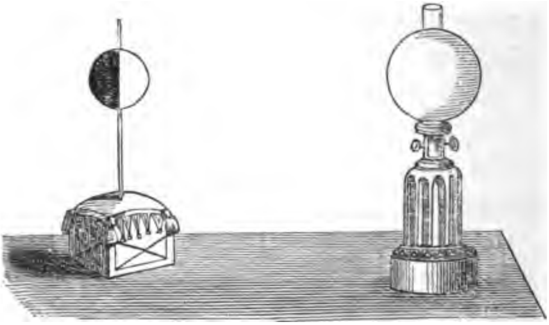
Daily Motion of the Earth.—Day and Night.

In the evening, the family sat round the table, when the father taught his sons how Day and Night are produced. George and Fred had thought, as other boys would, that the sun rose from behind the hills in the east every morning, and moved through the sky over their heads during the day, and in the evening sank down behind the hills of the west, to travel under the earth through the night. It was not strange for boys to think that such was the way in which Day and Night are caused, for even wise and learned men thought so, many years ago.

"There are many things in this world," said Mr. Goodman, "that are always moving—the rivers, the winds, and the waves; but the banks of the rivers, the shores of the sea, the fields and the mountains appear to be still. Yet, though they seem to be still, they are not really so. You remember when we were in the railway train, returning from the seaside, we noticed some things appearing to travel past us?"

"Yes," said George, "the trees and houses seemed to be racing by, in the opposite way to that which the train went, and we fancied the train was still while all other things were moving."

"I am glad you remember that," said the parent, for you will the more easily see how Day and Night are made."



The lamp was then placed near to the edge of the table; a pincushion was put on the opposite side, in which a long knitting-needle, pierced through an orange, was stuck upright.

"There," said Mr. Goodman, "suppose that lamp to be the sun, and the orange to be the earth on which we live. How much of the earth does the sun shine upon at the same time?"

"One half—that half towards the sun," replied one of the boys.

"The lamp shining on the orange shows how that the sun shines on half of the earth, while the other half is in darkness," said the father.

"We will stick a pin in the front of the orange, so that the head stands towards the lamp. Let us pretend that we live on that part where the pin is placed. The sun, you see, would be shining straight on our heads, and that means that it would be mid-day, or twelve o'clock."

The youths knew, of course, that day must change to night; and they saw that the dark side of the orange was exactly opposite to the light side. From this, they felt sure that the only way to get the pin's head into the dark, without moving the lamp, was to turn the orange half-way round.

"There," Mr. Goodman said, when the orange had been turned; "it would now be midnight, or twelve o'clock at night with us, while the people who were supposed before to be on the dark side of the orange, have the light shining full upon them."

They turned the orange a quarter round further, which brought the pin's head just peeping into the light.

"Ah!" said George, "I see now: that is what we call sunrise; but instead of the light coming to meet the pin, the pin really goes to meet the light," and the boy was quite right.

Then the orange was turned still further, to the opposite side, when the pin's head was leaving the bright light of the lamp, and passing into darkness.

Little Fred saw at once that this meant sunset, for the pin was leaving the light, and passing into darkness; and his father explained that it was the pin leaving the light, and not the light leaving the pin. "And this is really how Day and Night are made. The children in all parts of the world see the same sun, but not all at the same time. When we think the sun is coming from the east, we are really going from west to east to meet its light.

"In some future lesson I shall have to explain to you that the earth has another kind of motion which causes the seasons—Spring, Summer, Autumn, and Winter."

"All I want you to remember now is, that the earth turns round once in twenty-four hours; that it is day-time only on those parts of the earth that are turned towards the sun, and night-time on the other side, and that the sun does not move round the earth, but the earth round the sun."

---

twelve
trav'-el
mov'-ing
au'-tumn
pierc'-ed
in-stead'
knit'-ting
cush'-ion

Pro-duc'-ed, brought about, made.
No'-ti-fied, saw, observed.
O'-ce-an, a great sea.

DICTATION EXERCISES.

I.

*The earth is not at rest, although it seems to us to be so. It is constantly spinning round and round, night and day, without ever stopping for an instant. The line on which it turns is called the axis.** *The ends of the axis are the poles. The one is the north pole, the other is the south pole.*

II.

The earth turns on its axis once in every twenty-four hours; and thus every part of the earth's surface is brought under the influence of the sun's rays during a portion of that time. It is day-time in those parts which are turned towards the sun, and night-time in those parts which are turned away from the sun.

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* See next lesson.

LESSON XXVI.

Axis.—Poles.—Equator.—Zones.

At the commencement of another lesson one of the boys asked whether there was really a rod passed through the earth, like the needle through the orange.

"No," was the father's reply; "we use it as an *axis* on which to turn the orange, but God's system does not require such a rod. The earth hangs in space, as you sometimes see a balloon; and it turns round once in twenty-four hours. The places in the earth where you must fancy the rod to pass through are called the '*Poles*'; one of them is called the *north pole*, and the other the *south pole*. They are at opposite parts of the earth, as north and south are in opposite directions; and the line through the globe from pole to pole, not a real one, we speak of as an '*Axis*.'"

Mr. Goodman now tied a piece of thread round the middle of the orange, and said, "That, you see, divides the surface of the orange into two *equal* parts. And the line which we must fancy to go round the earth, dividing it half-way between the poles, is called the '*Equator*,' which means the line dividing into *equal* portions."

"I was reading this morning," said George, "about some people who live near the equator, and the book says that it is so very hot in the countries near the equator, that no fires and hardly any clothes are needed."

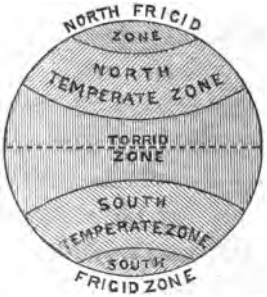
"Yes," replied Mr. Goodman; "and we call that part of the earth near the equator the *Torrid Zone.* The word torrid means burning, and the word *zone*, a band or belt, and you may readily guess that that part of the earth which is included in the torrid zone has a scorching climate."

"What is climate, father?" asked Fred.

"When we speak of climate," said Mr. Goodman, "we mean the kind of weather that prevails in a country, whether it is hot or cold, wet or dry."

"Those parts of the earth," added Mr. Goodman, "which are around the poles are intensely cold, and are called the *Frigid Zones.* The belt around the North Pole is the North Frigid Zone, and the belt around the South Pole is the South Frigid Zone.

"Between the Torrid and Frigid Zones the climate is not very hot and not very cold, and hence those parts of the earth are called the *Temperate Zones.*



"The Torrid Zone—or the Tropics—is the home of the elephant, hippopotamus, lion, tiger, camel, monkey, and crocodile, among animals; palm, rice, and sugar-cane among plants; and of the dark races of man.

"In the Temperate Zones the horse and sheep are the chief animals; and corn and cotton the most important vegetable productions. Of the human family, the most powerful and the most enterprising races are to be found in the North Temperate Zone. The whale, the seal, and the polar bear withstand the intense cold of the frozen regions, where fruits and vegetables are almost unknown."

Mr. Goodman further explained, that although, as a general rule, we may expect to find the climate hottest at the equator, and cooler and cooler as we proceed towards the poles, yet there are many circumstances to make the particular place hotter or colder than we might expect judging by its distance from the equator. Thus it is always cooler in summer and warmer in winter near the seas and oceans. One place may be subject to very hot winds, and another to very cold winds. One may have the cold winds kept off by high mountains, and another have the hot winds, and so on.

scorch′-ing **judg′-ing** **mon′-key** **ve′-ge-ta-ble**

Frig′-id, cold.

Tor′-rid, burning hot.

Tem′-per-ate, moderate.

E-qua′-tor, an imaginary line drawn round the earth half-way between the poles.

Ax′-is, the line on which the earth turns, as on an axle.

Com-mence′-ment, beginning.

Pre-vails′, is more usual, most common.

In-tense′-ly, extremely, very.

En′-ter-pris-ing, active, bold, determined.

LESSON XXVII.

ANNUAL MOTION OF THE EARTH.—THE SEASONS.

"You know now," Mr. Goodman commenced, "that the earth is a globe that spins round like a top, or like an orange on a knitting-needle; and you have learned that without this spinning motion there could be no day and night following each other, no sunrise and sunset. But this will not account for everything that we see.

"We will now find out a cause for the four seasons. You know their names?"

"Spring, summer, autumn, and winter," answered little Fred.

"When it is summer, the day is long," said the father; "which means that the part of the earth where we dwell is turned towards the sun longer than it is in the shade. When we looked at the orange on the knitting-needle we saw that just one half was bright, and the other half dark. If the earth always stood in that position it would, in turning round, have exactly twelve hours of day and twelve of night.

"But this cannot be the case, for in summer our part of the globe is longer in the light than in the shade, and so we have long days and short nights; and in winter we are longer in the shade than in the light, and so we have long nights and short days. And twice a year —in spring and autumn—one day is just twelve hours long, and the night the same. On those two days the time of light and shade is of the same length."

Mr. Goodman then described a coach-wheel rolling along the road. "It turns round and round on its own axle, and besides that it moves along the road. These movements are not alike. When a coachman cleans his carriage he raises a wheel off the ground, and spins it round and round while he throws water upon it. That is one movement—it turns on its axle, but does not move from the spot.

"When going down a steep hill the wheel is sometimes fastened with a chain, so that it slides down the road without turning round—that is a forward motion. But mostly we see the wheel moving forward and turning round on its axle at the same time. Send a cricket ball along the ground and you will see the same thing; throw it in the air and it will turn on its axis and go forward too.

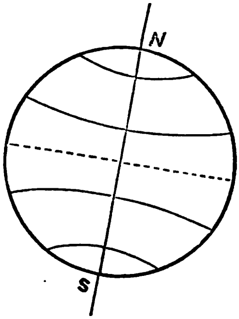
"This is just what the earth does. If we were to lay a cart-wheel flat on the ground, and place a lamp in the middle to stand for the sun, and roll a ball along the edge of the rim, so as to travel round the lamp, that ball would move in a similar manner to the earth. From this you will see that the sun stands still, and that the earth has two motions, one round its own axis, and the other round the sun."

George asked how long it took the earth to travel round the sun.

"The earth," replied the father, "turns on its own axis once a day, and it travels round the sun once a year. The path in which it moves round the sun is called its '*orbit.*'"

The lamp was then set in the centre of the round table to stand for the sun. The orange on the knitting-needle was placed near the edge of the table—the edge was like the *orbit*, or the path along which the orange had to travel round the lamp.

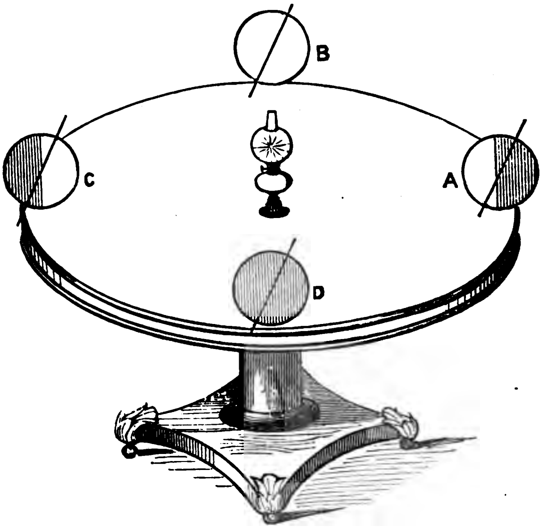
"Now," said the father, "if we place the needle upright, and let the orange turn round, all parts of the orange will be in the light half the time, and in the shade the other half. This will not do, for we should then have no summer with long days and short nights, nor any winter with long nights and short days. When a top spins it is upright; when you roll a ball on the ground it is the reverse; but as the earth spins round and travels along in its orbit, it is in a slanting position between the two, thus"—



"Now, do you remember the name of that line marked by the thread round the orange?" asked Mr. Goodman.

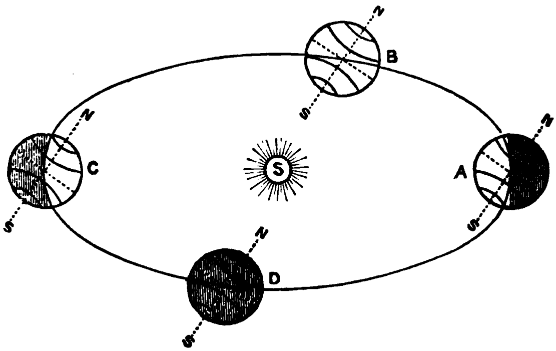
"The '*equator*,'" replied George; "it goes round the middle, and divides the orange into *equal* parts."

"Exactly," said his father. "Place the orange with the axis in the slanting position, and you will see that the light is always on one half the equator. This tells us that people who live on the line of the globe which that thread resembles always have day and night of equal length—twelve hours of each—because they are in the light for twelve hours and in the dark for twelve hours, and so on day by day all through the year. As one half the line is in the light, we know that the turning of the globe on its axis once round in twenty-four hours will bring every part of the equator into the light for half the time, and into the shade the other half."



The orange was then carried gently all round the edge of the table, while the lamp stood still. And this is the way in which it was lit up at four different places in the orbit.

Look at the orange at A, and fancy you see it turning on its axis; you will see that the part round the lower end of the needle is *always* in the light, and the part round the upper end is *always* in the shade. At C the upper part is *always* in the light, whilst the lower part is *always* in the shade. At B and D the light and shade are separated by a line drawn round the orange close to the needle.



"Now," said Mr. Goodman, "I will draw a picture on the blackboard to show how the earth travels round the sun. Here it is. The sun is in the centre, and the line represents the *orbit*. At A you see that the part round the north pole is *always* in the shade, whilst the part round the south pole is *always* in the light. So that, although the earth still turns on its axis, there is always night round the north pole, and always day round the south pole.

"As the earth travels towards B, the part round the north pole gradually comes into the light, whilst the part around the south pole gradually loses it, until at B the light and the shade reach just *as far as* the poles.

"At C the north pole has the light, and the south pole the darkness—just the opposite to what we saw at A. At D the light and darkness are similar to what we saw at B."

"And where is our country placed on this globe?" asked George.

"A very proper question," said his father. "Our country is situated between the north pole and the equator. When the globe stands as it does at B, the earth turning round on its axis places us in the light for about twelve hours, and in the dark for twelve hours. Then it is our spring season. When the globe reaches the place marked C, our part of the earth is in the light more than twelve hours, and in the dark less than twelve hours; then it is the summer season, for we have long days and short nights. We next—three months later on—come to the place which we have marked D; and as the earth turns on its axis, it keeps on the light side half the way round and the dark the other half. This is our autumn, and the day and night are again equal. Then when the globe rolls in its orbit to the place we have marked A, you see that our part of the world as it turns round is longer in the dark than in the light; and that is our dark winter season.

"Now, George, can you tell how the seasons are caused?"

"Yes," said George; "they are caused by the slanting position of the earth's axis as it rolls round the sun."

"And how is it that the seasons are different in the northern and southern halves of the world? I hope you understand that, Fred," said their father.

"Oh, yes," answered Fred; "at one part of the earth's orbit the sun shines more on the northern part of the world, at another more on the southern part of the world."

"That is right," said Mr. Goodman. "There is a good deal more to be learned about the motions of the earth when you are old enough.

But that is as much as I can explain to you now."

---

ax′-le	**thread**	**car′-riage**	**coach′-wheel**
spin′-ning	**south′-ern**	**sit′-u-a-ted**	**ex-act′-ly**

Or′-bit, the path of a planet.

Dictation Exercises.

I.

Besides the daily motion the earth has another motion. It travels round the sun once a year: hence this motion is called the yearly or annual motion. In its path or orbit round the sun the earth is held in a slanting position, and this together with the annual motion causes the Seasons:—Spring, Summer, Autumn, Winter.

II.

It is strange to think of, but it is true, that we in England have our winter when the earth is nearest to the sun, and our summer when it is farthest away. But countries situated in the southern half of the world are different in this respect. For they have their winter exactly when we have our summer, and therefore when the earth is farthest from the sun.

LESSON XXVIII.

DEGREES.—LATITUDE.—LONGITUDE.

"How large are the zones?" asked George.

"I will try to explain how we measure the zones," said his father: "Suppose we draw a line round our ball passing over the poles. This line forms a circle. We agree to divide this circle into 360 parts, and to call each part a degree. One of these degrees measures 69½ miles. Hence we have 360 degrees, written 360°, as the distance round the earth through the poles. Perhaps Fred can tell us how many degrees there must be in the quarter of the circle, or from the equator to the pole?"

"Ninety," replied Fred.

"Right," replied his father. "Now we can measure the width of the zones. Let us make the equator our starting-point: then 23½° north and 23½° south of the equator gives us the Torrid Belt; 23½° from the north pole gives us the North Frigid Belt, and 23½° from the south pole gives us the South Frigid Belt. Of the 90° from the equator to the poles 47° are taken up by half the Torrid and one Frigid Zone, leaving 43° to the Temperate Zone."

"May we draw the lines ourselves as well as we can on the large india-rubber ball?" asked George.

"Certainly," said Mr. Goodman; "a very good thought. You had better first mark the position of the poles, next draw a line round the ball at equal distances from the poles, to stand for the equator, and lastly draw a line from pole to pole crossing the equator. You may now divide the line from the equator to one of the poles into nine equal parts.

"Why into nine?" asked Fred.

"Because then each distance will stand for 10°," said George.

"Now," said Mr. Goodman, "if we draw lines through these divisions, parallel to, that is everywhere equally distant from the equator, we shall the better be able to say how far any part of the earth is from the equator. We can, for instance, fix the position of a ship with reference to the equator. These lines are called Parallels of Latitude, because Latitude is the distance from the equator measured north or south."

"But," asked Fred, "cannot the globe be measured the other way round?"

"To be sure," answered the father. "Take your other ball, and fix the position of the poles, and draw the line to represent the equator as before. Now divide the equator into 360 parts, or degrees, and draw lines from the poles through every tenth degree. These lines will help us to measure east and west, but one particular line must be taken to measure. Shall it be the one that passes through England, or France, or America?"

"Why not take the one that runs through England?" asked George.

"Exactly!" replied Mr. Goodman. "That is just what is always done in this country, and people in other lands take for the starting-line one that runs through theirs. Now, the place in England where men most study the movements of the moon and stars, the action of the sun and the winds, and many other things of the kind, is Greenwich, close to London. They draw a line round their globe so that it cuts through the poles and the spot marked 'Greenwich.'

"Just as we did with the equator, when counting degrees of latitude—call it 0—we will do with this line from which the degrees of distance will be counted the other way round the globe. *Latitude* means 'width,' and the lines we are now making run the opposite way, which suggests 'length,' so we call them degrees of *longitude*, meaning degrees of length. On the line that runs through Greenwich, the sun shines straight at 12 o'clock in the day, which time is called 'noon;' and all the places on that line from one end to the other have noon at the same time.

"'*Meridian*' means 'noon,' so we call the whole of the line a *meridian*. As the earth spins round to the right, it takes some time for the next line (marked 10°) to come to the same spot, just 40 minutes, and then it is noon at all the places on that line: so we call that line also (and, indeed, each of these lines of longitude) a meridian, for they all have a noon-time in turn once a day. Every 40 minutes the earth moves on its axis a distance of 10 degrees, and so gets round a circle of 360 degrees in the day. What did I say these measurements were called?"

"Degrees of Longitude," answered Master Fred.

"Then," asked his father, "if we count 90 degrees to the right hand, that will count as 90° *east* longitude, for that is the eastern direction. Suppose we count 90 degrees to the left; what is that called?"

"90° *west* longitude," replied George.

"And," Mr. Goodman asked, "if we count round on both sides till we come to a meeting-place, how many degrees shall we have counted?"

George answered, "180° east and 180° west longitude."

The boys saw at once that twice 180° made 360°, and so a complete circle had been formed.

"We must notice," said Mr. Goodman, in conclusion, "this difference between the degrees of latitude and those of longitude. The degrees of latitude are always the same length, about 69½ miles, in whatever part of the world you measure them, because the lines that mark them are *parallels*—*i.e.* always at the same distance from each other. But the degrees of longitude are longest on the equator, and from there they grow less and less, whether we go northwards or southwards. The reason is, of course, that all the meridians are drawn from pole to pole. They are widest apart at the equator, and they meet at the poles."

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cir′-cle
move′-ments
quar′-ter
sug-gests′
re′-fer-ence
di-vi′-sions

De-gree′ (in geography), one three hundred and sixtieth part of a circle going round the earth.

Par′-al-lel (in geography), a line drawn round the earth, so as to be everywhere equally distant from the equator.
Mer-i′-di-an, a line drawn from pole to pole round the earth.
Lat′-i-tude, distance north or south of the equator.
Long′-i-tude, distance east or west of a fixed meridian. In England the meridian of Greenwich is taken.

DICTATION EXERCISE.

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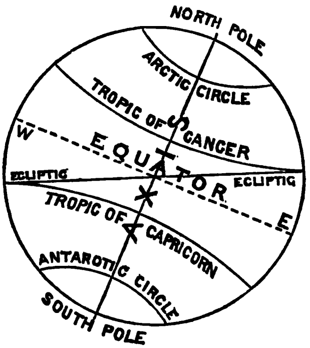

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